# *DelphMap*

## ***User's Manual***

*Software documentation through v2.10*

*June 2004*

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3. Wear a grounded, anti-static wrist-strap. This is especially important if you are removing, replacing, or installing a printed circuit board of any kind.

Failure to adhere to these and other safety precautions mentioned in the manual could result in harm to property or personnel!

**When working with magneto-optical cartridge disks**

- Please refer to the Appendix entitled “Mass Storage Options” for important details covering the handling of M-O disks!
- Never boot your system with a writable M-O cartridge inserted into the drive!
- Use magneto-optical media that has 512 bytes per sector, not 1024 bytes per sector, and use the AFDisk software utility to format magneto-optical media. Never use Windows 95 to format M-O media!

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# Preface:
# Using This Manual

This book is intended for user who wishes to use the DelphMap software application to create and combine georeferenced images containing side-scan sonar mosaics, bathymetric DTMs (digital terrain models) and other data.  See the list of supported file formats in Chapter 1, 'Getting Started with DelphMap,' under the section 'File Types in DelphMap'. That section also indicates which applications can be used to create these files.
Because the software explained in this book runs on Windows NT 4.0, Windows 2000 and Windows XP, you should know how to work in those environments so you can find, run and exit the programs discussed here.

We use these conventions in the book:

***Denotes a warning or caution*** .

***Denotes an import ant statement, tip, or hint.***

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# CHAPTER 1 Getting Started with DelphMap

## *Software Installation Notes*

Typical software installation CD may contain folders like the ones depicted in the Windows Explorer layout. (See the figure, ***Typical listing of TEI software installation folders '***)

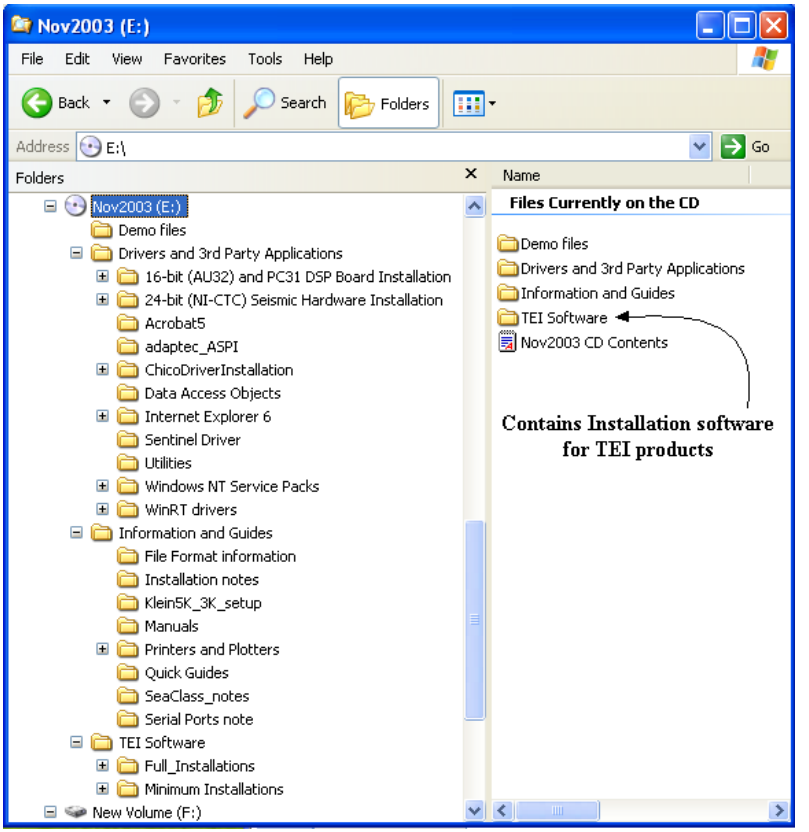



***FIGURE 1. Typical listing of TEI software installation folders***

TEI software is compatible with Windows NT 4.0, Windows 2000, and Windows XP. The following notes will help you achieve a smooth installation of the software.

- Please exit from all other applications before running any of the installation programs.
- You will not be able to complete the installation on an NT4.0 or Windows 2000 system if you do not have administrator's rights. All Isis "black boxes" ship with a user name Isis. In this case the Isis user name has administrator's rights and does not require a password.
- Each application is installed by browsing to the appropriate folder (for example, Isis5.50 Install) on the CD and double-clicking on the SETUP.EXE file found in that folder.
- TEI recommends that if you have more than one hard drive, you install the software on the second (usually the D:) drive, using the default folder names on the CD. You will be given the option to select any drive during the setup process, select the Custom option and change the drive letter.
- The first installation on an NT4.0 system requires a re-boot during the installation; however, this only occurs for the first installation. Under Windows 2000, no rebooting is necessary during the installation process. However, you must reboot the system after installing under Windows NT 4.0.
- For each application, a number of sample data files can be optionally installed. These files will reside in a subfolder called Demo Files within each application's main folder. These special files can be played back or processed by the relevant TEI applications without a TEI sentinel being installed. If no sentinel (dongle) is attached, a message displays, indicating either that a sentinel was not found or that the sentinel is damaged. However, you can still play back the sample files that come from the CD.
- In order to run the software in acquisition mode, or to play back or process other files, you will need a TEI sentinel attached to the LPT1 printer port. Contact TEI if you need a sentinel.
- If the operating system is Windows NT 4.0 or Windows 2000, you will need to install a sentinel driver. The driver is included on the CD in the Sentinel folder; a text file, with installation instructions, is in that folder.
- In the case of Windows NT 4.0, Service Pack 5 (or higher) needs to be installed. Service Pack 5 is on the CD.

- The TEI manuals that are installed with the software are in Adobe Acrobat PDF format. Acrobat Reader software (required to read the PDF files) is also on the CD.
- The CD has a number of other folders containing drivers and applications that could be required; each folder has a text file with more information.
- To remove the software, use the Add/Remove Programs utility in the Windows Control Panel collection of utilities.
- The installations make two changes that are not restored when the programs are removed using Add/Remove Programs. They are:
    - the addition of a folder called [TEIdlls] in the Windows or WINNT folder, and
    - a modification to the PATH environment variable which adds the [TEIdlls] folder to the PATH. The [TEIdlls] folder can be safely deleted after all TEI software has been removed.

## *Upgrading to a Newer Software Version*

If you already have a version of the software that you wish to upgrade on your system, you will see a dialog box inviting you modify, repair, or remove the software you intend to install. See the figure, ***Modify, Repair, Remove choices during installation***' for an example of this kind of dialog box.

Isis Sonar 5.75 Setup
Program Maintenance
Modify, repair, or remove the program.
Modify
Change which program features are installed. This option displays the Custom Selection dialog in which you can change the way features are installed.
Repair
Repair errors in the program. This option fixes missing or corrupt files, shortcuts, and registry entries.
Remove
Remove Isis Sonar 5.75 from your computer.
InstallShield
< Back
Next >
Cancel

***FIGURE 2. Modify, Repair, Remove choices during installation***

You will need to remove the old version of the software before you will be permitted to install the new version. To do so, enable the **Remove** button in the dialog box and click **Next**. You can then install the new version by rerunning setup.exe. As noted above, some items are deliberately not removed during the uninstall process; doing so can cause problems. If necessary, manually delete the **\TEIdlls** folder, but only do this if you are going to re-install ***all*** TEI applications.

Important Note: The Windows Installer will fail to uninstall the software if the operating system has been upgraded from (for example) Windows 98 to Windows 2000 after the TEI applications were installed. If you want to upgrade your operating system, uninstall the TEI programs first, and then re-install the TEI programs after the upgrade.

## *Solutions to Some Common Problems*

**Problem:** After about five minutes the installation does not complete and the Windows desktop does not return.

**Solution:** Try again after using <CTRL+ALT> + <DEL> to shut the system down and restart. The problem can be caused by applications running in the background or not being shut down before running the installation.

**Problem:** Under NT the installation may fail after the first re-boot, with a message that it cannot locate the file **SETUP.EXE**.

**Solution**: This can occur if the CD ROM drive is slow getting started after the first reboot. Just use Explorer to double click on setup.exe again, and the installation will proceed normally.

**Problem**: There is insufficient space on the **C:** drive, even though **D:** (or another) drive has been chosen to install the programs.

**Solution**: Under Windows NT, the Windows Installer needs to build the complete Installer Engine and files on the **C:** drive. The file can be as large as 250 MB for a full installation. Windows 2000 will require much less space, since the operating system includes the Installer Engine.

**Problem**: After the Installation completes, you see the message, "The dynamic link library map.dll could not be found in the specified path…" when the program is started.

**Solution**: You MUST reboot the system after finishing the installation. This is necessary so that changes to PATH environment variable can be applied.

**Problem**: When you try to connect to a serial port in DelphSeismic or DelphMap, you may receive this message: **Serialdll.dll was previously loaded from an unexpected location**…. This will only occur on a system that has had a previous version of either DelphMap or DelphSeismic installed.

**Solution**: First close the serial server (if it's running), then search for the following files: **SERIALDLL.INI** and **SERIALSRV.INI** (These are found in the Windows folder.) When you find these files, delete them.

**Problem**: You may not be able to install all the options (demo files, manuals, help files) unless you can free enough space on the C: drive.

**Solution**: Consider using the **Minimum Installations** option located on the CD to install only the programs you need.

**Problem**: When first running Isis after installing a new version, you receive an error message that says your Isis **CFG** configuration file is out of date.

**Solution**: This message alerts you that **CFG** files created with versions of Isis earlier than this version of Isis are incompatible. Click **OK** to accept the message. A new, compatible **CFG** file will be created during your current Isis session. In future Isis sessions, the incompatibility message will no longer appear.

**Problem**: You receive error messages such as **The procedure entry point xxxxxxxxx could not be located in the dynamic link library yyyyyy.dll** when trying to start one of the TEI applications.

**Solution**: This error may occur on a system which has had earlier versions (prior to Fall 2000) of TEI software installed. Use Windows Explorer to search for the following files:

| | | | |
|---|---|---|---|
| About.dll | HydroNavCurve.dll | mpx_mape.dll | ShpLib.dll |
| ASRVAPI.dll | HydroNavInfos.dll | Navpntw.dll | SinglePrc.dll |
| Attitool.dll | HydroNavPlan.dll | Navprcw.dll | SpeckleFilter.dll |
| AuxDlfDll.dll | HydroTools.dll | Navtools.dll | Speed.dll |
| Bathtool.dll | ImpObj.dll | ObjectDll.dll | TEISplash.dll |
| Chrutlw.dll | Importxt.dll | ObjectToBdd.dll | TeiGUIExt.dll |
| CMGBase.dll | LinearFeature.dll | Palette.dll | TEImpxmap.dll |
| D24Param.dll | lxtools.dll | patchtst.dll | Tide.dll |
| DdsErr.dll | TEImap.dll | PIPETRK.DLL | TimeTag.dll |
| dxflib.dll | mifutil.dll | PitchYaw.dll | TVGAuto.dll |
| Encode.dll | MOSAIC.DLL | Printer.dll | VecPropDll.dll |
| EncodeS.dll | Mpx_Country.dll | profile.dll | Vif2xyz.dll |
| Geometry.dll | Mpx_llne.dll | qtclib.dll | Volume.dll |
| geotiff.dll | Mpx_main.dll | SeisDemo.dll | XtfTools.dll |
| HydroNavAtti.dll | mpx_map.dll | Serialdll.dll | |

These files ***must*** be unique on the system (that is, there must be only one instance throughout your entire computer). The installer copies the latest version to a folder ***{Windows Folder}\TEIdlls*** during the installation process. If any files with the above names are found that are not in ***{Windows Folder}\TEIdlls,*** then you should delete (or rename) them.

***With the Summer 2001 release of TEI software, some DLL names changed to avoid conflicts with other non-TEI applications. The DLLs that conflicted were: map.dll and splash.dll. If you are upgrading from the Fall 2000 release of TEI software, delete map.dll and splash.dll from C:{Windows Folder}\TEIDlls.***

***Note: {Windows Folder}*** is the folder on your system where the Windows operating system is installed. For example, **C:\WINNT, C:\Windows** are ***{Windows Folder}*** types.

**Problem:** There is no display of the timing parameters in the Delph Seismic Recording Parameter Settings dialog box, and there is no display of either the signal window or the pipe display in the Isis pipetracking module.

**Solution:** This problem can occur with certain "high-end" hardware accelerated graphics cards such as ATI Rage Pro, and Voodoo 3d Fx. Right-click on the Windows Desktop, select **Properties → Settings → Advanced → Troubleshooting** (or **Properties → Settings → Advanced → Performance**), and reduce the amount of hardware acceleration that is being used.

**Problem:** You receive an error message during installation of TEI software. For example, you may see this message:

***Error — Unable to write to temporary location***

**Solution:** You may see that message if you are running certain anti-virus software, such as Norton (or other brands too). Check to see that you have disabled your anti-virus software. The solution is to temporarily turn off Norton Auto-Protect:

1. Right-click the Norton icon (or other anti-virus icon) on the Windows taskbar.
2. Select Disable Auto-Protect when prompted.
3. Resume installing your TEI software.

4. When the installation completes, re-boot your PC.
5. When the system restarts, Norton Auto-Protect will be re-enabled by default.

## What DelphMap Does

Starting with one or more files DelphMap recognizes ('***File Types in DelphMap***'), DelphMap displays one or more "layers" of multiple, geocoded sonar imagery, or color-coded DTM (Digital Terrain Model) imagery, and bathymetry contour vector graphics. The imagery displays according to the geo-coding in the file or files, creating a mosaic. If the mosaic contains multiple layers, they can be superimposed over any other layer.

## File Types in DelphMap

In order to display images in DelphMap, you first create a DelphMap project. A project file contains no actual imagery, either vector or raster; instead, a project file contains a list of references and path information to the various files that may be present in a DelphMap project. Project files are denoted by the filename extension DMP. A .DMP file is created by DelphMap whenever a project is saved.
You put DelphMap images into a project file either by inserting files as layers or by importing them into a DelphMap project.

Types of files that can **be inserted as layers** directly into a DelphMap project:

| | |
|---|---|
| ***.AIF,*.VOB** | Older versions of mosaic files. |
| ***.BSB** | a non-TEI, proprietary image format for navigational charts |
| ***.CLA** | Questor Tangent Classification (QTC) files. |
| ***.DDS_VIF** | Generated by BathyPro (processed bathymetry data as a DTM) or generated by Isis Sonar (SSS imagery). This Visual Information File (VIF) can contain many sublayers, enabling the merging of different data types for display in DelphMap. For example, a single .DDS_VIF could contain both bathymetry (topographical) and side-scan sonar (non-topographical) data. |
| ***.DXF** | AutoCAD Drawing Exchange Format, (up to and including version R14), vector graphics, labels, lines, shapes. |
| ***.ENC** | Electronic Navigational Chart format |

***.PCM** Pulse Code Modulation photo image file
***.SHP** ESRI® ArcView Shape files.

Types of files that can **be imported directly** into a DelphMap project:

***.CON** Contact files generated by Target or TargetPro.
***.DDS_VOB** Vector layers, along with a DDS_VIF file containing a visual image.
***.DXF** Seabed Classification files generated by SeaClass (an instance of a DXF file).
***.SPN** Span files generated from the Pipe Tracking module in Isis.
***.TIF,*.BMP,*.JPG** As background imagery; typically aerial photographs or charts.

***Note:*** From version 2.9 on, a .DDS_VIF file containing sidescan sonar imagery will have an accompanying .DDS_VOB vector file containing the vessel's track.

## *Protecting Your Project Files*

When you run DelphMap, it creates and modifies several files unique to the program. Foremost among these files is the Delph project, a file having the extension DMP. After you have specified a DMP Delph project, DelphMap creates additional files in the same directory (folder) where the Delph project is created, or in additional directories you have set up and specified to DelphMap (see ***'Organizing Directories for a Project'***),

***Do NOT delete, rename, or move any DelphMap files from the directories where they are created.***

## *Organizing Directories for a Project*

In the course of building a project, DelphMap creates a number of files. You'll find it easier to keep track of things if you create directories dedicated to the project you make. All files supporting the project files can be redirected to subfolders of the project folder.

**Procedure for setting up a series of DelphMap project folders**

1. In Windows Explorer, create a parent folder (directory) to hold your DelphMap project (DMP) file.
2. In Windows Explorer, create child folders — one for each type of file and/or layer to be inserted/imported.

For example, you might create a subfolder for your contacts, a subfolder for your bathymetry and/or side-scan sonar files (DDS_VIF), another for your XTF files, one for your DXF files (if any), and so on. Such an arrangement would produce one parent folder and some child folders. Figure 3 shows an example of this.

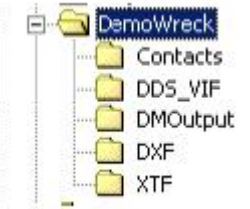



***FIGURE 3. Project Parent Folder and Five Arbitrary Child Folders***

In the example shown in Figure 3, the DemoWreck folder is the parent folder and will contain the DMP file for this sample project.

3. Copy the different files you wish to include in your project into the appropriate child folders for this project.
4. Run DelphMap (double-click the DelphMap icon or file name to run it).
5. From DelphMap's main menu click **Settings → Files** and specify the folder you created in step #1. This will become your working directory for this project.
6. Create a new DelphMap project file name to be associated with the project you are creating: filename.DMP — where filename.DMP is the name of the project you are creating, such as MyProject.DMP. As you do this, visually verify that filename.DMP is being created in the parent folder specified in step #1.

7. One at a time, import file(s) or insert whatever layers will be part of your project. Specify one of the previously created and appropriate child folders to hold the contents of the layer or file. If you are adding layers to your project, make sure that the layer names you assign to them are unique. See ***'Working With Layers Inserted into a Project File'***.

## *Running DelphMap and Making a Project File*

Before DelphMap can create your mosaic, DelphMap first needs to establish a project file or DMP file.

### To run DelphMap and establish a project file

- Double-click the DelphMap icon to run it.

DelphMap runs and displays an application window similar to the one shown in Figure 4, with a default name of NewProject.dmp as the project name. You can accept that project name or specify one of your own.

### To specify a different project name

1. From the DelphMap main menu, choose **Project → New Project**.

DelphMap displays a dialog box where you can specify a project file to open or create.

2. Provide a primary file name for the project. This can be an existing DMP file, or you can let DelphMap create it. DelphMap provides the file extension DMP, which stands for DelphMap Project. The DMP file acts as a container for any layers you may add or remove.
3. Click **Save** after you have selected or typed the name of the project file.

The project file loads and the system displays the DelphMap application working window. If the project file already exists, its contents are displayed here. If the project file is new, the work space in DelphMap is initially empty (Figure 4).

### To open an existing project

1. From the DelphMap main menu, click the Open icon:

DelphMap displays a dialog box where you can specify a project file to open.

2. Specify the file name by either typing it or browsing for it from this dialog box.

### To save a project file

- From the DelphMap main menu, click **Save** or **Save As…**

If you click **Save**, the system saves your project as it currently is displayed, without further prompting. If you click **Save As…**, the system prompts you for a file name. The **Save As…** feature may be particularly useful if you anticipate making more changes to your current **DMP** project file, in that DelphMap does not have a "close without saving" function — that is, projects are automatically saved upon exiting DelphMap.

## *Noting the Parts of the DelphMap Window*

The DelphMap application window displays several parts you can work with. Figure 4 shows a sample application window with parts labeled.

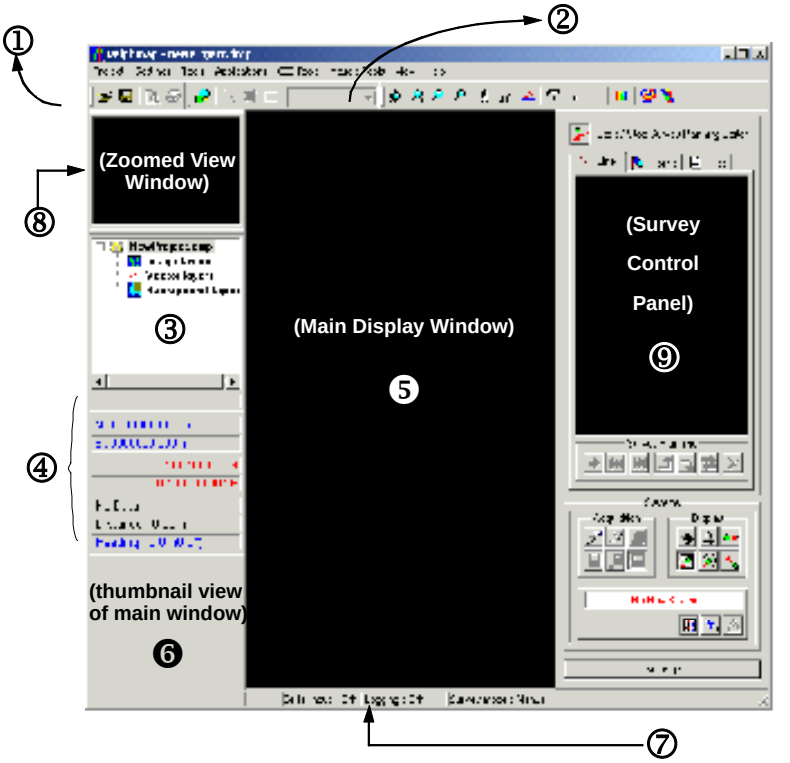



***FIGURE 4. Major parts of the DelphMap application window***

## *Understanding the DelphMap Window*

The parts of the DelphMap application window are explained next. The explanations are associated with the callout numbers shown in Figure 4.

### Toolbar Icons

Area 1of Figure 4. All the toolbar icons are explained in ***Chapter 4, 'Managing Layers,'*****Error! Bookmark not defined.**. (Some of the same functionality also can be accessed through the application's main menu.) Toolbar icons are grouped into two main chunks: the display set of icons, and the standard group of icons. Both sets of icons are movable and dockable, but not resizable (see ' ***Customizing the Work Space'***).

## Feature Selection Box

Area 2 of Figure 4. From this drop-down box you can select one of seven different descriptive names for labeling aspects of the imagery that you have demarcated with DelphMap drawing tools. You also can create custom names for features by typing over the currently highlighted name in the box and then pressing <Enter>.

## Project Files Window

Area 3 of Figure 4. Initially, the Project Files Window displays only the project name with a plus sign to the left, indicating a "collapsed" (non-expanded) status. The named project in this window is expandable and, if already expanded, then it is collapsible. An expanded project name displays one or more of its layers, depending on the degree of user-selected expansion. If the layer's file name and path goes beyond the right edge of the Project Files Window, you can slide the horizontal slider bar at the bottom of this window to see the obscured part of the layer's file name and path. Alternatively, if you place your cursor on a file name, DelphMap displays the entire file name and path. The window is movable and dockable, but not resizable (see '***Customizing the Work Space***'). The hierarchy of the entities displayed in the Project Files Window is as follows, from top to bottom level:

1. project name (as user-defined ***filename***.DMP)
2. image layers (if any; user-defined)
3. vector layers (if any; user-defined)
4. background layers (if any; user-defined)

DelphMap displays the file name of the layer below the name of the layer that has been inserted into the project.

## Position and Distance Window

Area 4 of Figure 4. Referring once again to the figure, the top four lines of the Position and Distance Window continuously display the current co-ordinates of the cursor, both in eastings and northings and in latitude/longitude. The bottom two lines display the distance and heading when this function is selected from the toolbar. The window is movable and dockable, but not resizable (see ***'Customizing the Work Space***').

## Main Display Window

Area 5 of Figure 4. The largest area of your DelphMap application window, the Main Display Window contains the large view and detail of your map. The window can be resized but not moved, docked, or redocked from its initial position (see '***Customizing the Work Space***').

## Overview Window

Area 6 of Figure 4. Shows a thumbnail of the image layers. The size of this image remains constant even if you zoom in our out of the image in the Main Display Window. If you use the trackball to draw a rectangle around some part of the image in the Overview window, the image in the main window resizes to the dimensions of the area defined by the drawn rectangle in the Overview Window. The window is movable and dockable, but not resizable (see '***Customizing the Work Space'***).

## Status Bar

Area 7of Figure 4. This static and fixed part of the bottom of the screen displays system messages regarding the status of the program, any errors, etc. This window is immovable and therefore not redockable. However, you can hide/unhide it by unchecking/ checking the **Status window** from the **View** menu. This component of the window cannot be moved or resized.

## Zoomed View Window

Area 8 of Figure 4. This functionality is accessed from the main menu as **View → Zoomed View window**. When activated, the Zoomed View window displays a user-selectable degree of magnified or minified view of whatever imagery currently is in the Main Display Window, tracked to the cursor position when the cross-hair cursor icon ("Turn Cursor On/Off") is set to On (as indicated by the indented view of the cursor icon). When you make this window and the cross-hair cursor icon active, the resulting display makes it easy to see both the context and the zoomed content of the imagery at the cursor position.

## Survey Control Panel

Area 9 of Figure 4. This part of the application window, known as the Survey Control Panel, controls DelphNav. DelphNav is an optional, fully functional navigation package that works with DelphMap. If you purchased DelphNav,

see the separate technical manual, Using DelphNav, provided by Triton Elics International, for the functionality of this part of DelphMap.

## *Customizing the Work Space*

From the View menu, all visible parts of the application window, except for the main display area, can be turned on or off by placing a check mark next to the named view. By default, all viewable items are initially displayed, and thus all the choices in the View menu initially have a check mark next to them. The menu bar at the very top of the screen is always visible.

In addition, except for the status bar, the main display area, and the main menu list, any of these items can be docked or redocked. This means you can move the items to any other part of your screen independently of the main application window if you click on an edge of the item and drag it to any other area on your screen. If you move an item out of the DelphMap application window, the imagery in the large part of the application window adjusts and redraws to make use of the space vacated by the item you moved. If you move an item currently residing outside the application window back into the DelphMap work area, the large display area again adjusts and redraws to occupy available space.
If you place your pointer over a toolbar item, a tool tip (also known as ***quick tip***, ***balloon help*** or ***bubble help***) displays under the item, identifying its purpose.

# Chapter 2 Icons and Display Tools

Using icons and other display tools, DelphMap has several controls for working with imagery. This chapter explains those controls.

## *The Toolbar Icons*

Most of the display manipulations can be done conveniently from icons appearing in a toolbar underneath DelphMap's main menu. Many of the functions represented by the icons are also available as text choices from DelphMap's menus.

Most icons are unique to DelphMap. For the layout order of the icons on the toolbar, please refer to Figure 4, ***'Major parts of the DelphMap application window,'***. This section you are reading describes the icons according to features they have in common, without regard to the order that they appear on the toolbar.

### Open and Save

The **Open** (left) and **Save** (right) icons are the same as those available to most Windows applications. In DelphMap, choosing the **Open** icon gives you a way to change a project or create a new one. Similarly, choosing **Save** saves the current project.

### Zoom to Content

The **Zoom to Content** function refreshes the screen and recenters the imagery in the main display area to display the entire mosaic at a size approximately one-fourth the square area of your main display window. The keyboard shortcut is **[F6]**

## Zoom In

The **Zoom in** function magnifies the image in your main display area by a factor of two and moves the image away from the midpoint of the main display window by twice the distance from the current position. Keyboard shortcut: **[Num] [+]**.

***Note:*** It is possible to zoom your image beyond the edges of the main display window, where you won't be able to see it. If this happens to you, either click the **Zoom to Content** icon or draw a rectangle around some part or all of the image in the Overview window. The image will reappear in the main display window.

## Zoom Out

The **Zoom out** function shrinks the image in your main display area by a factor of two and moves the image halfway between the midpoint of the main display window and the image's current position. Keyboard shortcut: **[Num] [-]**.

***Note:*** It is possible to make your image so small by repeated clicking of **Zoom out** that you no longer can see the zoomed out image. If this happens to you, either click the **Zoom to Content** icon or draw a rectangle around some part or all of the image in the Overview window. The image will reappear in the main display window.

The next four functions — **Zoom rectangle**, **Pan**, **Measure Tool**, and **Display profile** — are designed to be mutually exclusive; choosing any one of them excludes the others from being operational at the same time.

## Zoom Rectangle

You use the **Zoom rectangle** function to draw a rectangle with your mouse or trackball around some part of your imagery (either in the Overview or Main Display Window). When you do this, your main display window is filled with the image in the dotted line rectangle. If you decide not to use this

function, click the icon again to return the icon to a non-selected state. (Choosing a different icon also deselects this icon.)

## Pan

Use the **Pan** function to reposition the imagery in your main display window. After clicking the icon, left-click your mouse or trackball in your imagery and then draw a line in the direction you wish to move the image — the longer the line, the greater the shifted distance of the image in the display window. The line does not have to be touching (but can be touching) any part of the image. If you decide not to use this function, click the icon again to return the icon to a non-selected state. (Choosing a different icon also deselects this icon.)

## Measure Tool

The **Measure tool** function enables measurement of range and bearing between points on the image. When you left-click and draw a line in the main display window, DelphMap displays the imagery's distance and heading in the last two frames of the Position and Distance window. The reported values are "sticky"; that is, they remain displayed until you click again in the image to establish a new distance and heading. If you decide not to use this function, click the icon again to return the icon to a non-selected state. (Choosing a different icon also deselects this icon.)

## Edit/Save a Digit

With this icon you can create, edit, and save points or vector lines as a vector layer. Clicking this icon enables the **Draw a Point** icon and the icons for three drawing line types, which you can use to plot waypoints or profiles of your imagery. You can also access this function from the main menu by choosing **Tools→Digit→Start/Stop Digit**.

## Drawing Line Types

If you have enabled the **Edit/Save a Digit** function, you can then choose a line drawing tool shown here. Reading from left to right, the drawing tools are: draw a polyline, draw a point, draw a rectangle, and detect image regions. All line types are mutually exclusive to each other. Before you use this function, you might want to select or create a label in the Feature Selection combination box that you wish to associate with the points or lines you intend to draw. These functions also are available from the Digit menu.

**Draw a polyline.** This enables the user to create an open or closed polyline. A closed polyline can be filled with a regional fill pattern.

**Draw a point.** This creates individual points; the shape of the point style can be changed by the user.

**Draw a rectangle**. Using a left click and dragging the cursor, the user can create rectangles of any size.

**Detect Image Regions.** This function is designed as an interpretation tool to detect a region of interest. It works best on objects that have a high contrast, such as a high intensity wreck on a low intensity sea floor. It detects regions by taking a starting sample (the pixel you clicked on), than searches the surrounding pixels until it encounters pixels that are less than 3dB from the original pixel. All the surrounding pixels that meet the criteria are included in the region.

**To draw a vector line or shape on your imagery**

1. Enable **Edit/Save a Digit**.
2. If this is the first time you have selected this function in a project, you will be prompted to select a Digit file you want to Open or Create. If this is a new project or you want to start a new Digit file, create a Digit .vob file by entering a file name. If however, you have a previous Digit file that you would like to add to, browse and select the previously created Digit file.

3. Select (or create) a label to be associated with the points or lines you intend to draw, which you can do from the Feature Selection Box (see page 18).

If you drew a polyline or polygon, right-click after you're through drawing the point or shape; doing so displays a menu of these choices: **Save**; **Edit Object** ; **Delete Point**; **Close object**; **Quit; Delete Object**; **Copy**; **Paste**.

Choose one of those actions.

4. Choose one of the drawing line types from the Tools Palette.
5. Drag or click your pointer in the main display window working area to complete the chosen type of vector graphic.

The completed vector lines now appear in the imagery where you drew them. A label from the Features Selection Box appears next to the shape, line, or point.

**To spline smooth vector lines and shapes**

The spline function is located as line type number 5 in **Vector→Properties→Settings**. Figure 5 shows the line type options box.

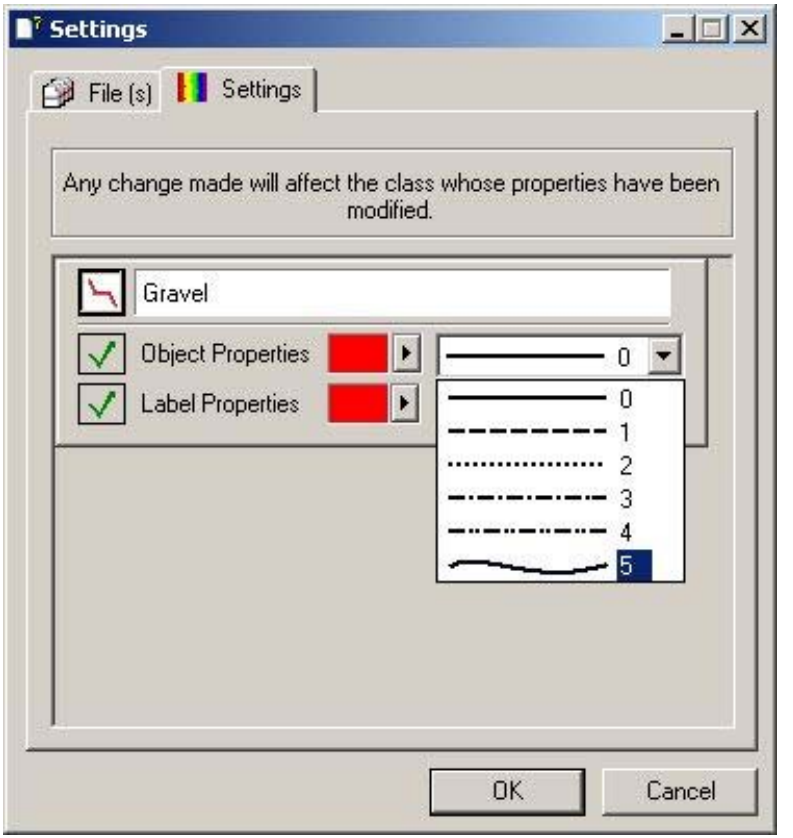



***FIGURE 5. Spline option located as line type in Vector→Properties→Settings***

## Measure Tool

The **Measure tool** function enables measurement of range and bearing between points on the image. When you left-click and draw a line in the main display window, DelphMap displays the imagery's distance and heading in the last two frames of the Position and Distance window. The reported values are "sticky"; that is, they remain displayed until you click again in the image to establish a new distance and heading. If you decide not to use this function, click the icon again to return the icon to a non-selected state. (Choosing a different icon also deselects this icon.)

## Display a Profile of the Image

Normally, you view your imagery from the top down ("bird's-eye" view). DelphMap can also display your imagery in a side view. See Chapter 6, ***'Displaying Image Profiles'***, for a comprehensive explanation of this function

## Refresh the Screen

The **Refresh** function merely refreshes the screen. Unlike the **Zoom to Content** function, **Refresh** does not reposition the imagery from its current position, nor does it resize the image. The keyboard shortcut: **[F5]**

## Turn Cursor On/Off

In DelphMap, your cursor can be a conventional white arrow (the default) or a white cross. If you enable the white cross cursor, any cursor movement done in the Main Display Window is echoed in all View Layer windows, as long as "Synchronize Map scale and position" is turned on in **Settings→Tools**. Cursor movement is not tracked in the Overview Window, unless the cursor is activated in **Settings→Tools**. As the icon's name implies, the **Turn cursor on/off** function toggles on or off.

## Metric and Geographic Grids

Clicking this icon displays a dialog box for two types of gridding — metric or geographic — each of which can be set independently of one another (or not set at all). The keyboard shortcut is <CTRL+G>.

- When geographic gridding is enabled, DelphMap superimposes a geographical grid over your imagery. Grid intervals are in seconds.
- When metric gridding is enabled, DelphMap superimposes a metric grid over your imagery. Grid intervals are in meters.

For either type of grid, you can change the intervals to get more or fewer grid lines (thereby increasing or decreasing the density of the grid).

***Note:*** Choose a grid interval suitable for the area covered by your imagery. If you choose a very small grid interval for imagery that covers a large area, your system may take a long time to draw the grid.

## Change the Color Palette Settings

Clicking this icon displays a dialog box where you can define a color palette and palette density for each of five data types: **side-scan**, **bathymetry**, **seismic reflector**, **volume**, and **user-defined**. The data types present in the palette window correspond to the data types that are currently displayed in the main GIS window. If no layer is present, then all data types appear. If some of your data displays without sufficient visual definition, this visual aid can help boost the values of your low intensity data to make them stand out more. Choose a color and density that gives you the best visual results. If you select **user-defined** to create your own palette, the system displays a separate dialog box where you specify minimum and maximum values to be applied to your designed palette.

Some combinations of color palettes are especially effective for side-scan and bathymetry data types:

- for side-scan: **copper**, **gray** or **pink** palettes yield excellent image detail.
- for bathymetry: just about any palette works well.

To apply the color combinations to your image, be sure to match the correct data type to your image.

### Bathymetry Processing

If you have purchased the BathyPro utility from Triton Elics International, this BathyPro icon is enabled. Clicking it summons the DelphMap-BathyPro application where you can process, either interactively or in batch mode, single beam and multibeam data, resulting in output of DDS_VIF or DXF files that can be re-imported into DelphMap for more processing. You can also get to this function by choosing **Applications→ Bathymetry processing** from DelphMap's main menu.

### Run Classification Module

If you have purchased the Classification utility from Triton Elics International, this Classification utility icon is enabled. You use it to generate a map of the surrounding seafloor. You can also get to this function by choosing **Applications→Seafloor classification** from DelphMap's main menu. The SeaClass functionality is documented in the ***Using SeaClass User's Manual***, distributed as a PDF file on a CD.

### Manage Layers

If you have multiple layers within a DelphMap window or project, you can invoke the layer management capability by clicking on this icon. The layer management dialog allows the user to make collective changes to the layers. User can delete, hide, display or reorder vector and image layers within the DelphMap project. You can also access this function by choosing **Tools→Manage Layers** from DelphMap's main menu.

## *Additional Display Aids*

Some DelphMap icons and menu choices exist simply to help you see the imagery more clearly. The Settings dialog box, accessible from a vector layer's Properties choice, is an example of this. The DelphMap Settings dialog box available from the main menu is another example. Among icons, the Refresh

icon, the Cross Cursor icon, the Metric and Geographic Grid icon, and the Color Palette icon also are examples of additional display aids.

## General Settings Menu from Main Menu

From DelphMap's main menu you can summon dialog boxes where you can specify settings affecting imported files, colors to be used in displaying various objects in DelphMap and settings to be applied to 2D and 3D Contacts. Such settings apply to all layer types.

### All Settings

If you choose **All Settings** , you get a dialog box with five tabs — one for **Files**, **Tools**, **Pipe & Span Tracking, 2D Contacts** and **3D Contacts**. Alternatively, you can choose separate dialog boxes for each of the named tabs directly from **Settings** in the main menu.

### Settings for Files

DelphMap has three settings that you can change or set for files. The choices become available from the main menu by choosing **Settings→Files** or by choosing **Settings→All Settings** and then selecting the **Files** tab. The current Working Folder path is displayed and to change it, click on the ellipsis button. This brings up the Windows file browse dialog.

- **Working Folder** - The directory set here becomes the default directory for DelphMap to open files from, and to place files generated by the current project. This is also where the DelphMap project .dmp and .dds_mpf files are stored.

❑**Open the Last Opened Project on Startup** - This does exactly what is says, once a checkmark has been put in the box and the project is saved. The next time DelphMap is opened, the current project will automatically be loaded.

❑**When inserting vector or single-band image layers, don't ask for a layer name. -** This represses the insert dialog box that asks for a layer name when inserting certain file types.

An unchecked box (setting disabled) is the default condition for this parameter for these last two options.

## Settings for Tools

A dialog box for tools settings for can be reached from the main menu via **Settings→Tools** or by choosing **Settings→All Settings** and then selecting the **Tools** tab. Figure 6 shows the dialog box as selected from the **Tools** tab of the All Settings menu.

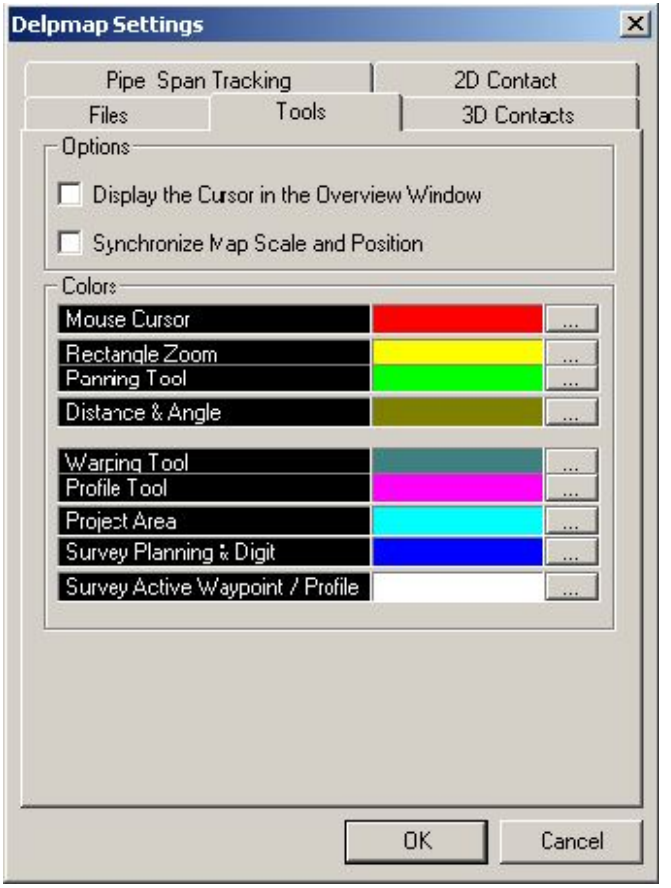



***FIGURE 6. Delphmap Settings dialog box (Tools tab)***

From the Browse buttons ( ) next to any of eight objects associated with the DelphMap application window, you can change the colors to be associated with the objects, as

❑***Display the Cursor in the Overview Window***, and

❑***Synchronize Map Scale and Position***

**Display the Cursor in the Overview Window** means that cursor activity also appears in the Overview Window if the **Turn Cursor On/Off** icon is enabled in either the Overview Window or the Main Display Window. An unchecked box (setting disabled) is the default condition for this parameter.

**Synchronize Map Scale and Position** means that when you make a change to an image in the current Overview Window, those changes are also made in the Main Display Window. When changes are coordinated this way, it becomes easier to see the effect of your changes in the context of the composite image in the Main Display Window. An unchecked box (setting disabled) is the default condition for this parameter.

## Settings for 2D Contacts

From TargetPro, there is the option of automatically importing saved contacts into DelphMap. The option whether or not to import is found in TargetPro under **Tools→ Configuration.** However, from within DelphMap, there are several options for how to import the contact.

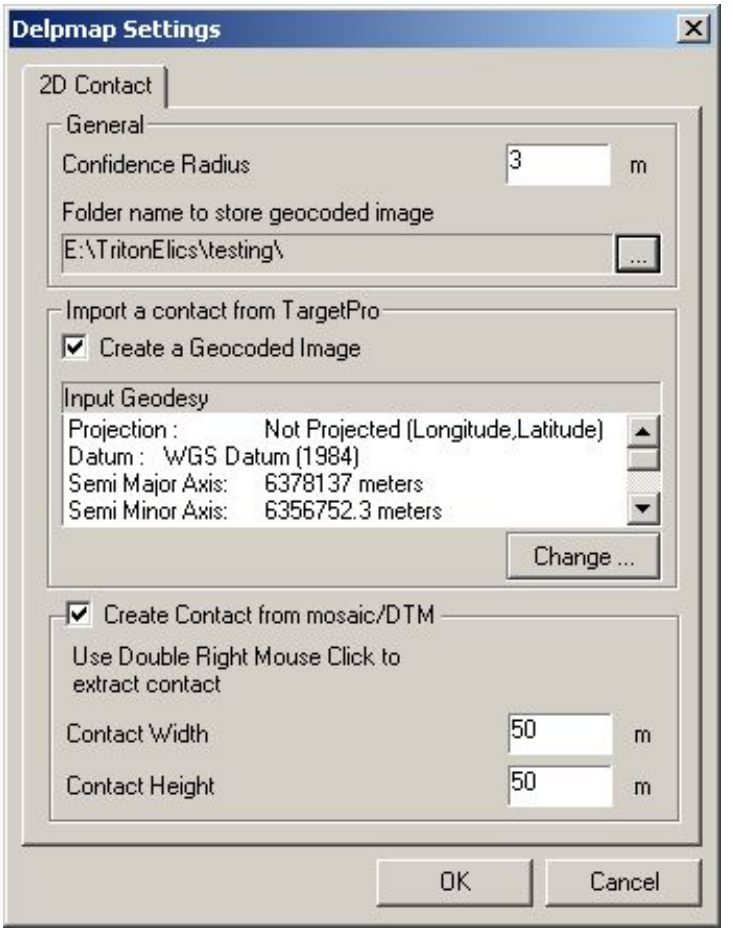



***FIGURE 7. 2D Contacts dialog box***

**Confidence Radius.** When a contact is imported, or generated from within DelphMap, a circle is drawn around the target position. The radius of this circle represents theh confidence the user has in the target's position. The default radius is 3 meters. Circles of different radii are possible in the same DelphMap project.

**Folder name to store geocoded image.** When importing a contact, the user has the option of creating a geocoded image of the contact. A geocoded image looks something a mini-mosaic of the contact. You need to specify where to store these files; the default directory is the directory where the DelphMap executable file (.exe) is found, or the last directory set from a previous DelphMap project. To change the path and directory, click on the browse button ( ) to bring up the Windows file browse dialog.

**Create a Geocoded Image.** You have the option to automatically create a geocoded image when importing the contact. If this box is unchecked, no geocoded image will be created.

**Input Geodesy.** The geodesy set here is the projection of the incoming contact from Isis and TargetPro. The incoming projection is NOT always the same as the projection of the DelphMap project. For example, the DelphMap project will always be in a grid projection such as Universal Transverse Mercator (UTM), State Plane or Mercator. Quite often, the data is collected in Latitude/Longitude, which is not projected. If your data was collected in Latitude/Longitude, ou would want to set the Input Geodesy to be Not Projected (Longitude, Latitude). If your contact is imported into DelphMap and is placed far from the rest of your contacts and layers, double check this input geodesy.

## Settings for 3D Contacts

You use DelphMap's 3D Contacts feature to examine your imagery in three-dimensional perspectives and, optionally, to take a digital picture of the viewed 3D imagery. Controls affecting this capability are found in the 3D Contacts dialog box, accessible from the main menu by choosing **Settings→3D Contacts** or by choosing **Settings→All Settings** and then selecting the **3D Contacts** tab. Figure 8 shows the dialog box.

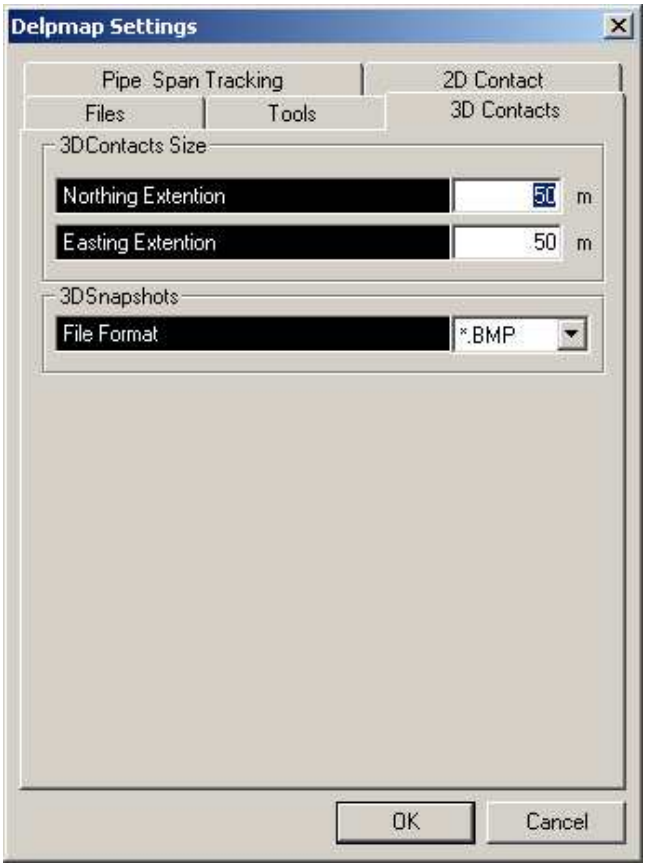



***FIGURE 8. 3D Contacts dialog box***

Displaying 3D contacts can be memory-intensive. If you get a DelphMap message that says you don't have enough memory to view your imagery three dimensionally, adjust the northing and easting extensions in the 3D Contacts Size fields of the 3D Contacts dialog box to use smaller extents. The default size is 10 meters. In this dialog box you also can specify one of four file formats to be used for any snapshots of 3D imagery that you make: **BMP** (the default), **TIF**, **TGA**, or **PCX**.

## Settings for Pipe & Span Tracking

You use the **Pipe Span Tracking** tab of the DelphMap Settings dialog box to choose the color scheme for three parameters affecting pipeline objects found in imagery: **Exposed**, **Half-Buried**, or **Buried**. From the **Pipe Span Tracking** tab, click a **Browse** button (...) next to a parameter to get a table of colors from which you can choose a color to be associated with that parameter; then click **OK** to set the color. Figure 9 shows the dialog box.

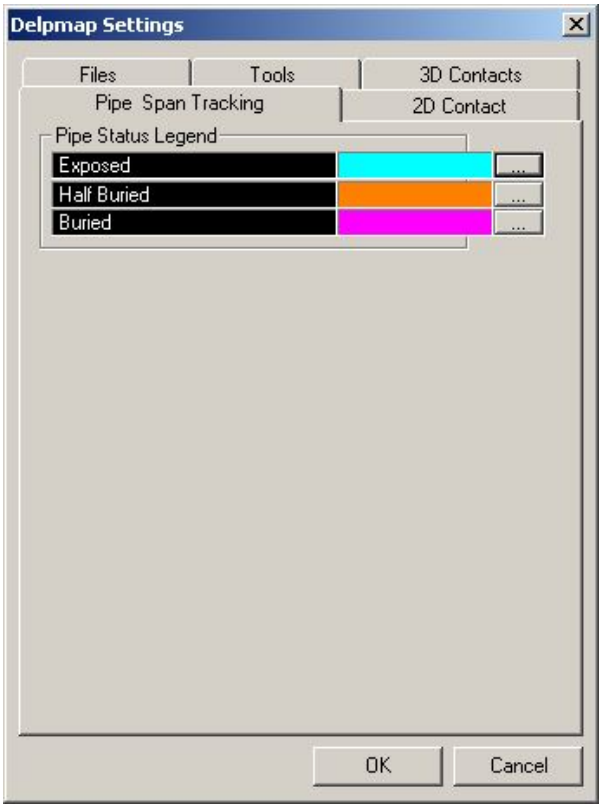



***FIGURE 9. Pipe Span Tracking tab in DelphMap Settings dialog box***

## Reset to Factory Settings

If you are experiencing unexpected behavior from DelphMap, consider choosing **Reset to Factory Settings** as a way out of the difficulty. If you choose this, any settings you may have established in DelphMap during this session or a previous session are overridden by the original factory settings.

## Setting Properties for a Contact Type of Vector Layer

If you have a vector layer inserted and present in your imagery, certain settings can also be viewed or applied to that layer. These settings differ from the general settings described earlier in ***'General Settings Menu from Main Menu'***. Moreover, the settings for contact layers and digit layers are laid out differently in their respective dialog boxes. All vector types have the same types of properties, however. Settings dialogs for contact and digit layers are explained next.

**To view file information for a contact type of vector layer**

1. Right-click on a vector layer name in the Project Files window.
2. Choose **Properties** .

The system displays the Settings dialog box for the selected contact layer. Initially the **File(s)** tab is in the foreground (Figure 10). This window has no user-accessible parts to it; it just shows properties of the current layer. Note that this dialog box is the only access path to the Settings tab for vector layers.

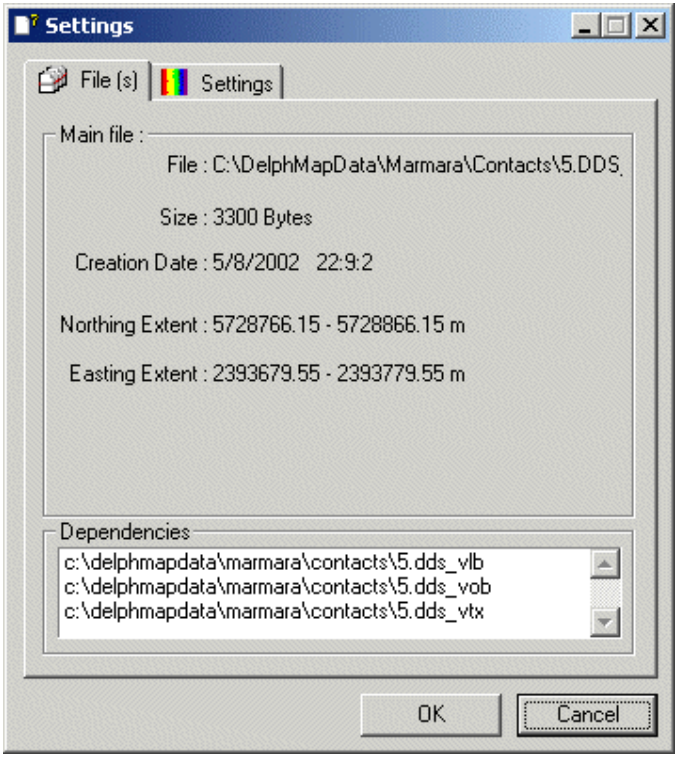



***FIGURE 10. File(s) tab area of the Settings box for vector layers***

**To set properties for contact objects and their labels**

1. Right-click on a vector layer name of a contact type in the Project Files window.
2. Choose **Properties** .

The system displays the Settings dialog box, with the **File(s)** tab in the foreground (Figure 10).

3. Click the **Settings** tab in the Settings dialog box.

The system displays the **Settings** tab area of the Settings dialog box (Figure 11).

Green check marks initially appear in boxes indicating that whatever properties are specified here will be set for objects and labels. If you click on a green check mark, it turns to a red "X" indicating that you will be suppressing that option in your imagery. Clicking a box again reverses this action.

In the Object color area, you can set the properties for **Objects color**, **Line Style**, **Point Symbol**, and a **Region Fill Pattern**. In the Labels color area you can specify a color and font size to use.

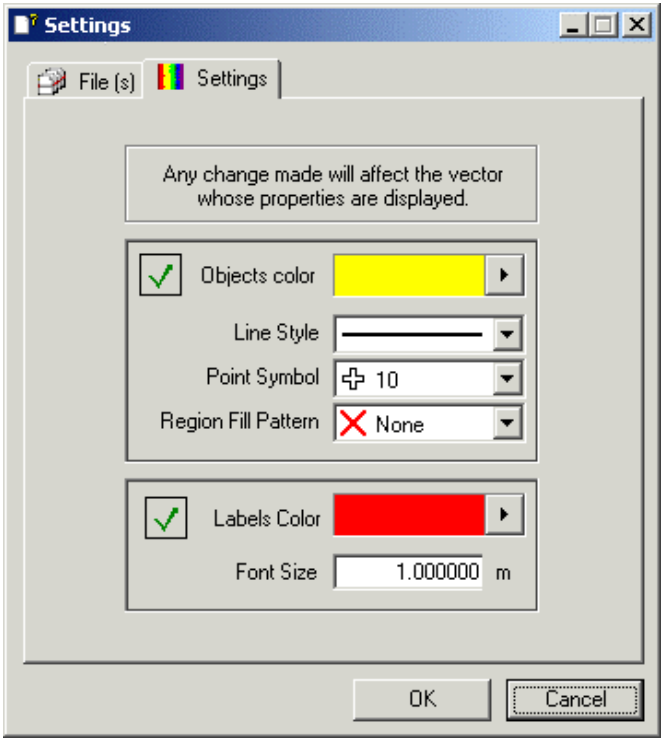



***FIGURE 11. Settings dialog box for a contact type of vector layer***

You can suppress or enable those colors, independently of each other, although it is advisable to make the **Objects color** and **Labels Color** match; that way, it will be easier to distinguish objects and their labels in your imagery. Also, if you are enabling an object and/or its color, it's a good idea to increase the **Font Size** so that the labels are easily readable in the imagery. We recommend a **Font Size** setting of **10.000000 m**.

4. After inspecting the colors currently assigned to the seabed objects and their labels, click or don't click on the boxes controlling those features in order to enable or suppress the features, as desired.

## Setting Properties for a Digit Type of Vector Layer

All of the properties that can be set for a contact layer can also be set for a digit layer. A digit layer's properties are laid out differently in its settings dialog box, however.

**To view file information for a digit type of vector layer**

1. Right-click on a vector layer name in the Project Files window.
2. Choose **Properties** .

The system displays the Settings dialog box for the selected digit layer. Initially the **File(s)** tab is in the foreground. The dialog box is identical to the dialog box shown in Figure 10 except that the names of the files in the Dependencies portion of the dialog will be those pertaining to digit layer files instead of contact layer files. This window has no user-accessible parts to it; it just shows properties of the current layer. Note that this dialog box is the only access path to the Settings tab for vector layers.

**To set properties for digit objects and their labels**

1. Right-click on a vector layer name of a digit type in the Project Files window.
2. Choose **Properties** .

The system displays the Settings dialog box, with the **File(s)** tab in the foreground (Figure 10).

3. Click the **Settings** tab in the Settings dialog box.

The system displays the **Settings** tab area of the Settings dialog box. An example is shown in Figure 12.

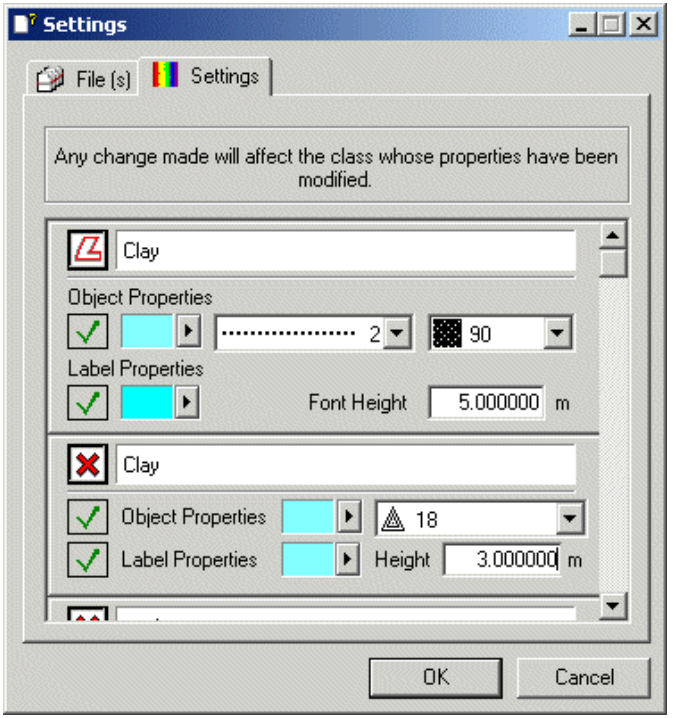



***FIGURE 12. Settings dialog box for a digit type of vector layer***

In the Settings tab area of the dialog box (example shown in Figure 12), you can modify the properties for the digit layer by changing the colors of the digit's object and its labels, by giving the object a different line style, by assigning a region fill pattern, and by specifying a font size. Each of these properties can be set independent of the other properties.

4. Click **OK** in the Settings dialog box if you made any property changes and wish to apply them to your digit layer; otherwise click **Cancel**.

**To assign colors to labels or objects in layers**

1. Right-click on a vector layer name in the Project Files window.
2. Choose **Properties** .
3. Click the **Settings** tab in the Settings dialog box.
4. Click the right-pointing marker (►) next to an **Objects color** or **Labels Color** you wish to change.

The system displays a Color dialog box (Figure 13) containing a matrix of 48 basic colors and 16 uncolored boxes reserved for custom colors that you can define.

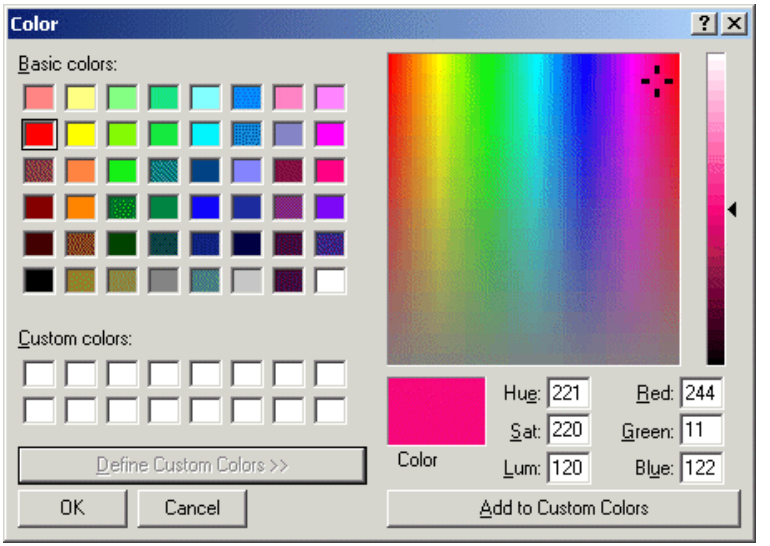



***FIGURE 13. Color dialog box for changing objects or labels colors***

5. Do one of the following:

   - Click a basic color and click **OK**, or
   - Click **Define Custom Colors >>** to expand the Color dialog box, where you can specify a non-basic color. You do so by clicking in the graduated color box or by typing values for **Hue**, **Sat**uration, and **Lum**inosity (or by typing values for **Red**, **Green** and **Blue**); then click **OK**.

For each of the remaining layers whose colors you wish to change, repeat the procedure ***'To set properties for contact objects and their labels'*** and the procedure ***'To assign colors to labels or objects in layers'***. When you have finished doing that, the seabed classification objects you imported into your imagery displays fully labeled and colored as you specified. Figure 21 shows an example of this treatment.

# Chapter 3 Importing and Exporting

DelphMap can import a number of different types of files as layers to form imagery. DelphMap can also export layers as a single file, making the result easy to work with as a single entity.

## *Importing Files of Different Resolutions*

Files of different resolutions can be imported into DelphMap. These include bathymetry, mosaic images and seismic profiles. For example, a mosaic image file with a resolution of 0.25 m can be inserted into a DelphMap project that contains a mosaic image with a resolution of 0.20 m and a bathymetry layer with a resolution of 0.5 m. The resolution displayed under **Project→Project Information** will be that of the layer with the highest resolution in the current DelphMap project.

## *Importing Different Kinds of Files*

Certain types of files must be imported in a special way so that they can be redisplayed properly in DelphMap. These include contact files, pipeline or pipespan files, seabed classification files, ASCII points with labels, seismic profile files, and photo image files. Once a file is imported, it becomes part of the composite image appearing in DelphMap's main display window. Other types of files planned for later importation into DelphMap are pipe span files and classification files.

Photo image files are of type **PCM** (Pulse Code Modulation). For further information about importing a photo image layer, please contact TEI Technical Support (831.722.7373).

### Importing a Background Image

DelphMap can import the following files types as background layers:

- TIFF
- BSB

If you have an appropriate background image that has the same kind of geodesy as other layers that either are or will be present in your imagery, you can enhance your displayed imagery in DelphMap by importing a background image into your project. A background file can either be a geoTIFF file or an electronic nautical chart (BSB format).

The geodesy information might be available to you a number of ways: It might be a text file specifying the corner coordinates and the resolution (size of each pixel). Or you might have a TFW (ArcView world file) or KAP (BSB format header file). Or the geodesy may be embedded in the header of a TIFF image you wish to import. In the latter case, the image is a true GeoTIFF.

In the case of a true GEOTIFF image, DelphMap will not need any further information. Importing the file should be automatic, since the TIFF header contains all the information required, including the projection. See ***'A Look at Geo-Referencing in a World File'*** for an explanation of this kind of geo-referencing.

To import a BSB electronic chart you will need both the **.bsb** and **.kap** files. The **.bsb** file is the raster image and the **.kap** file is the header file, which contains the geodesy information. When importing a BSB chart the projection should be "Not Projected (Longitude, Latitude)."

After being imported, a background image exists as its own layer in DelphMap.

**To import a background image**

1. Right-click anywhere in the Project Files Window and choose **Import→Background Image** . (or choose **Project→Import→Import an Image Background** from the main menu).

The system displays the Insert a Background Layer dialog box (Figure 14).

2. Using the dialog box's browse button ( ), locate the background layer image you wish to import.

As the **ATTENTION** message in the Insert a Background Layer dialog box reminds you, make sure that the projection of data in the background layer you are importing matches the projection that is present in your DelphMap image. Figure 14 shows an example of matched projection settings. If need be, you can change the projection using the **Change** button in the Insert a Background Layer dialog box.

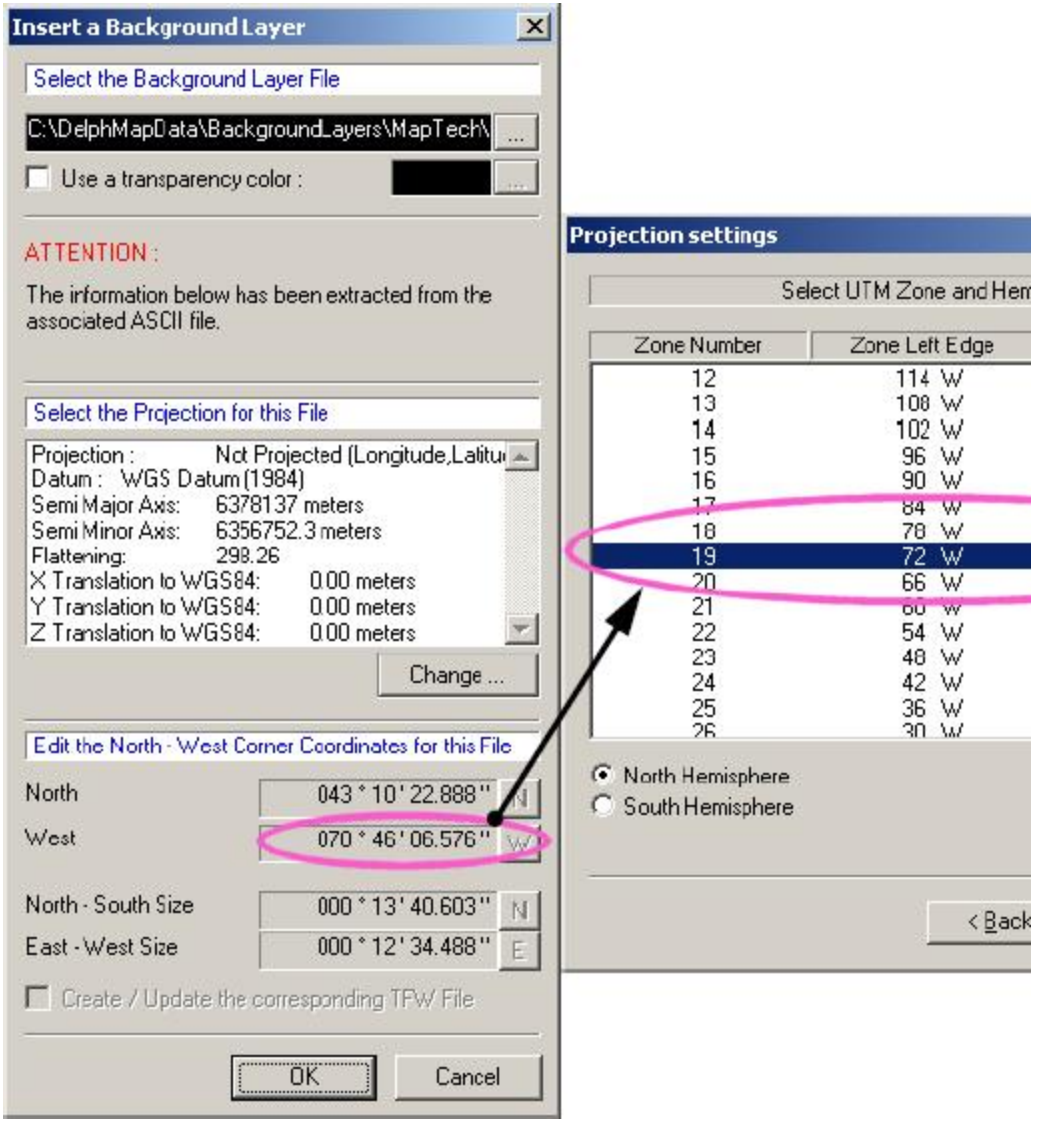

Insert a Background Layer
Select the Background Layer File
C:\DelphMapData\BackgroundLayers\MapTech\
Use a transparency color :
ATTENTION :
The information below has been extracted from the associated ASCII file.
Select the Projection for this File
Projection : Not Projected (Longitude,Latitu
Datum : WGS Datum (1984)
Semi Major Axis: 6378137 meters
Semi Minor Axis: 6356752.3 meters
Flattening: 298.26
X Translation to WGS84: 0.00 meters
Y Translation to WGS84: 0.00 meters
Z Translation to WGS84: 0.00 meters
Change ...
Edit the North - West Corner Coordinates for this File
North 043 ° 10 ' 22.888 " N
West 070 ° 46 ' 06.576 " W
North - South Size 000 ° 13 ' 40.603 " N
East - West Size 000 ° 12 ' 34.488 " E
Create / Update the corresponding TFW File
OK
Cancel
Projection settings
Select UTM Zone and Hem
Zone Number
Zone Left Edge
12 114 W
13 108 W
14 102 W
15 96 W
16 90 W
18 78 W
19 72 W
20 66 W
22 54 W
23 48 W
24 42 W
25 36 W
North Hemisphere
South Hemisphere
< Back

***FIGURE 14. Matching settings when inserting a background layer***

In order to position any bitmap correctly in a project, your file to be imported must contain the information shown in Table 1.

**TABLE 1. Info that must exist in an importable background file**

| Parameter | Discussion |
|---|---|
| the coordinates of the N-W corner of the bitmap in grid units | This information ***must*** be present either as Lat/Long or as a grid coordinate, if the position is in Lat/Long then you could use TEI GeoCalc to convert to a grid position that matches the projection information for your DelphMap project. If the position is already in grid coordinates, then you ***must*** have the projection information for those coordinates. |
| the N-S and E-W dimensions of the bitmap in grid units | If you don't know what the dimensions are, you may be able to calculate them if you know the resolution and the size of the image in pixels. To find the size of an image in pixels, you can open it in a number of different "Paint" type programs and look at the statistics or properties associated with the image. Or simply use the Windows Explorer (file manager) to get the information: Right-click the file name, choose **Properties**, and click the **Sum_mary** tab. The image's dimensions, in pixels, are displayed there. |
| the coordinate system (projection) that was used | You have this information if the upper left corner coordinates are in grid. If the coordinate system is specified as latitude and longitude, then you need to calculate the equivalent values for the grid system using TEI GeoCalc; after calculating, you can then specify whatever projection you need. |

3. ***Optional***: If you wish to seamlessly blend the unused edges of your background image with whatever background color is present in your DelphMap working window, put a check mark in the **Use a transparency color box** and choose the same color as the unused edges (usually white). When you do that, the borders of the background image will merge with whatever background color you have in DelphMap's working window.

***Note:*** Even when the position is in latitude and longitude, you should also check the datum. Usually this will be WGS1984, but it might be different and could cause an error in the position. Also, if the value of "Pixels/Inch" for the image is set to 100, then the image will look wrong, both in the preview and when it's imported. The only cure for this problem is to import the image into another application (PaintShop, Paint, etc.) and re-save it at the smaller or larger size desired.

World files, for example, contain the kind of parameters listed in Table 1. (See ***'A Look at Geo-Referencing in a World File'*** for a full explanation of the contents of that kind of file.) Or perhaps you have a text file that has the information DelphMap needs. An example of the latter is shown in Figure 15.

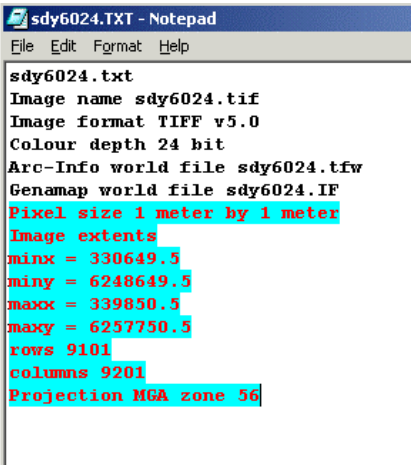



***FIGURE 15. Sample text file of navigation data***

4. Click **OK** to import the background layer image.

The file is imported as a background layer into your imagery. Also, the file name appears the Project Files Window under the Background Layer label. Figure 16, Figure 17 and Figure 18 show examples of this.

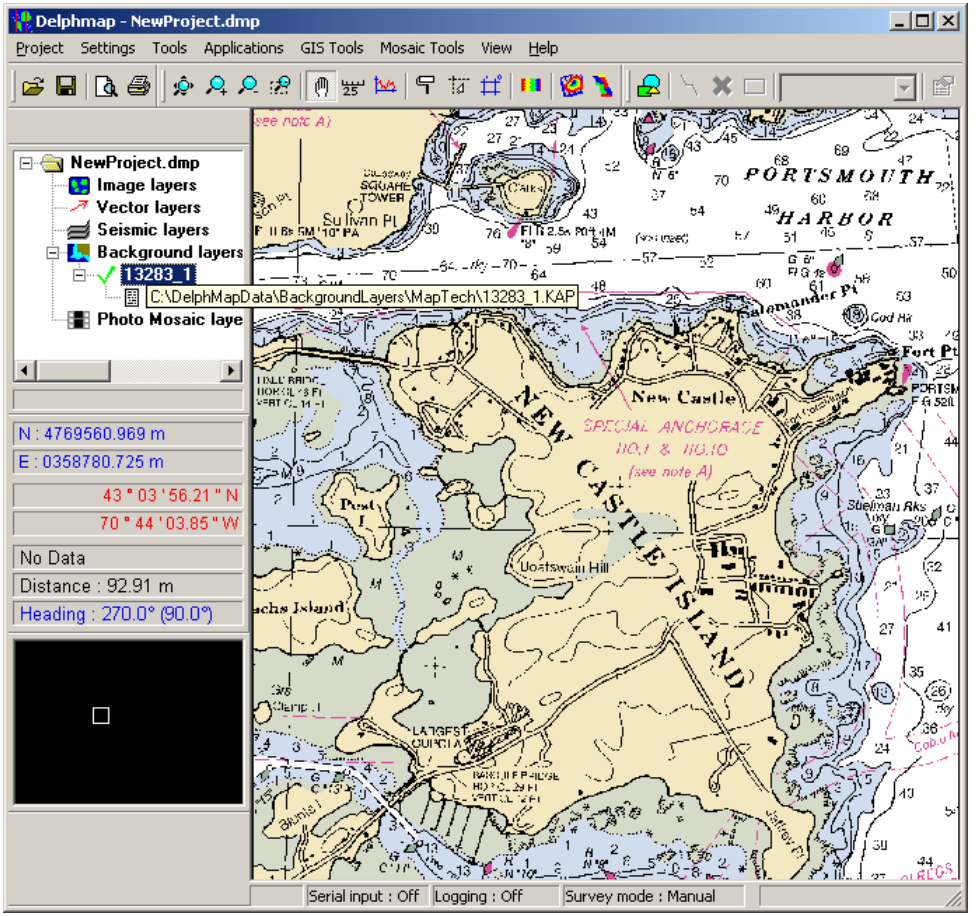



***FIGURE 16. BSB chart image imported as background layer***

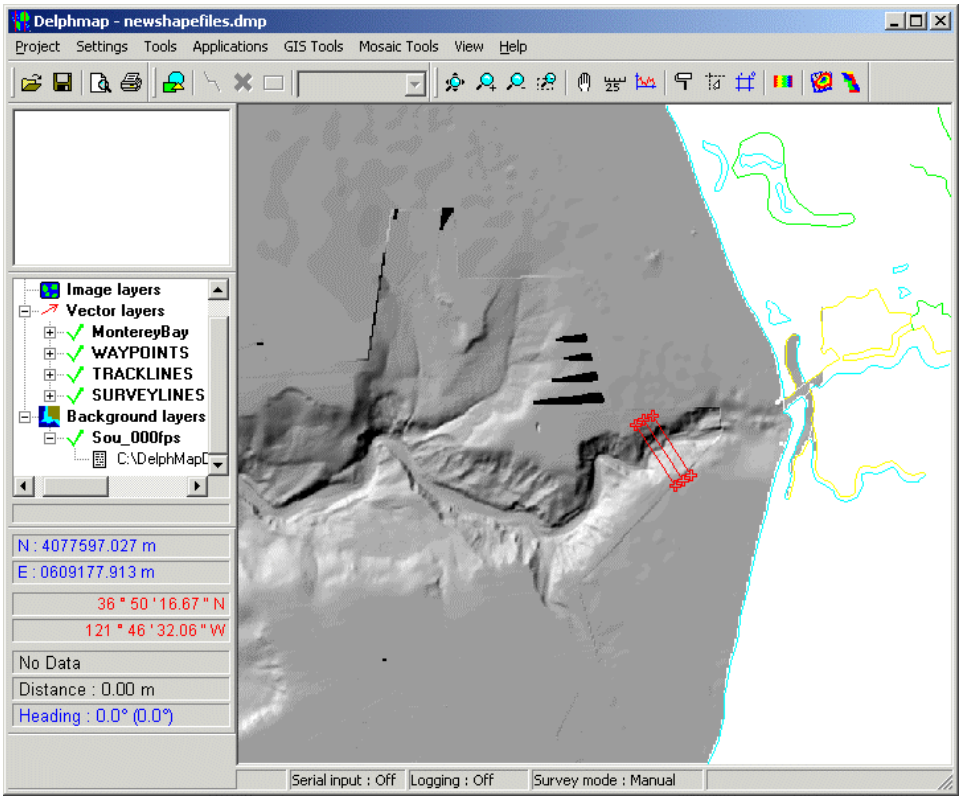



***FIGURE 17. Background and shapefile layers together in imagery***

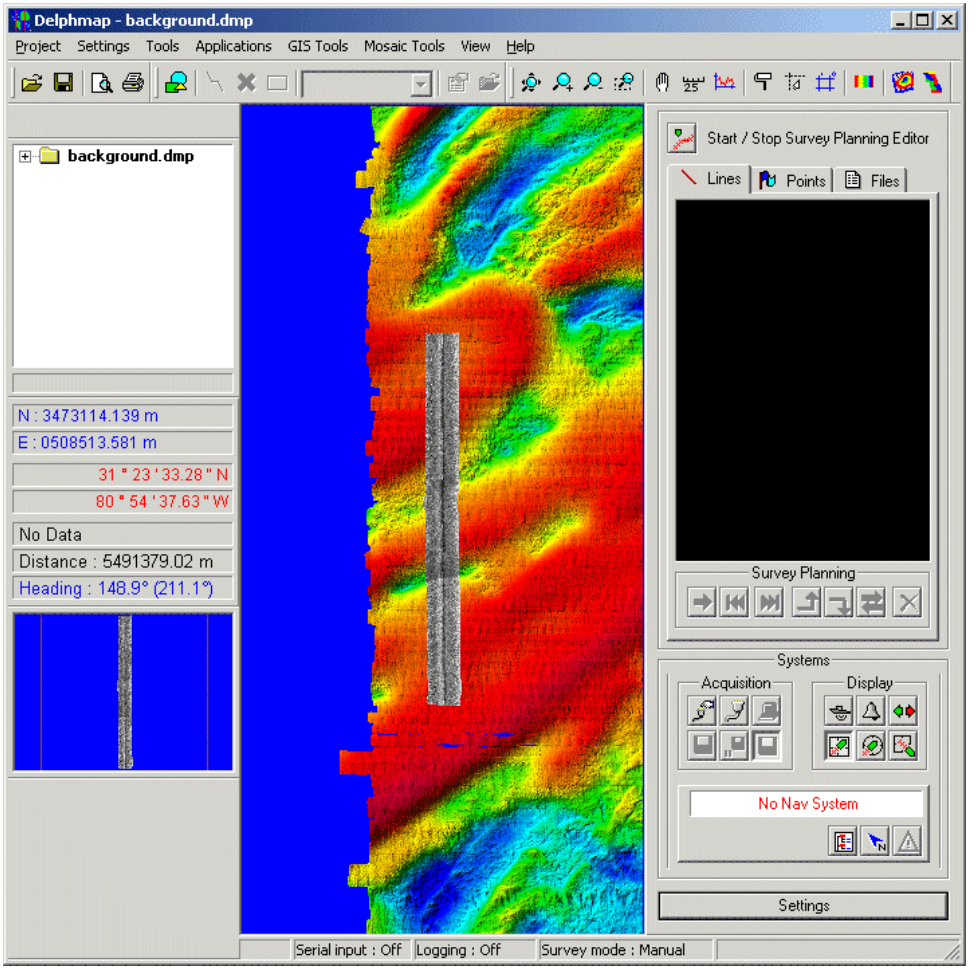



***FIGURE 18. Background and foreground layers inserted in imagery***

## Importing a Contact File

Contact (**CON**) files are files that have been created in Triton Elics's Target or TargetPro utility. You can import one or more contact files as layers into DelphMap. The contact files can be geocoded or not. There are two ways to import

- From within DelphMap, choose the **Import→Contact(s)...** option, or
- From Target or TargetPro, automatically send saved contacts to DelphMap.

**To import a contact file using the Import->Contact(s) option within DelphMap**

1. Before importing a contact or contacts, go to the main menu of DelphMap and choose Settings→2D Contacts to set up how the contacts will be imported. The setup includes whether or not to create a geocoded image, where to store the geocoded image, selecting the input geodesy, and choosing the size of the confidence radius. 1.

Figure 19 shows the 2D Contacts dialog box. For more information on each option, see ***Additional Display Aids, General Settings Menu from Main Menu***.

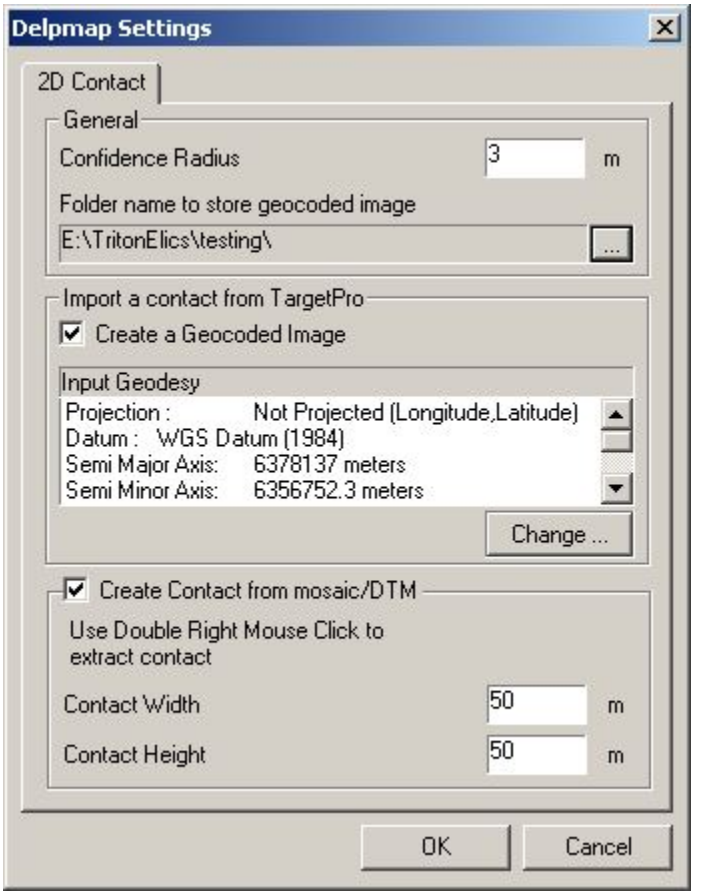



***FIGURE 19. 2D Contacts dialog box***

2. Once the 2D contact settings have been selected, from the main menu of DelphMap, choose **Project→Import→Import Contact...** or right-click on anything in the Project Files Window.
3. The system displays an Open file dialog box where you can select one or more file names to be opened. From a single directory, specify the name or names of the contact files you wish to import. Click **Open**.
4. Once **Open** is selected, the contact or contacts will be imported into DelphMap, according to the parameters previously set up in **Settings→2D Contacts**. The contacts are identified with a small cross at their locations, a circle (Confidence Radius) surrounds the cross; the circle's radius is equal to the value specified in **Settings→2D Contacts**; and the label is Target_***n*** for each contact, where ***n*** is the contact number. Figure 20 shows an example of an imported contact with a geocoded image.
5. Vector components of all contacts imported are put on the same vector layer, named ***Contacts***. The actual .**DDS_VOB** file created for all contacts takes the form

   ***{project name_Contacts}***.**DDS_VOB**, where ***{project name}*** is the name of the DelphMap project. The path is the working folder specified in **Settings→Files**.

6. If geocoded images were created, they will be displayed on individual image layers. The layer name(s) corresponds to the name of the contact. The image file(s) created are in the form .**DDS_VOB**; the file name(s) correspond to the contact name. The path for these images is the folder specified in **Settings→2D Contacts**.

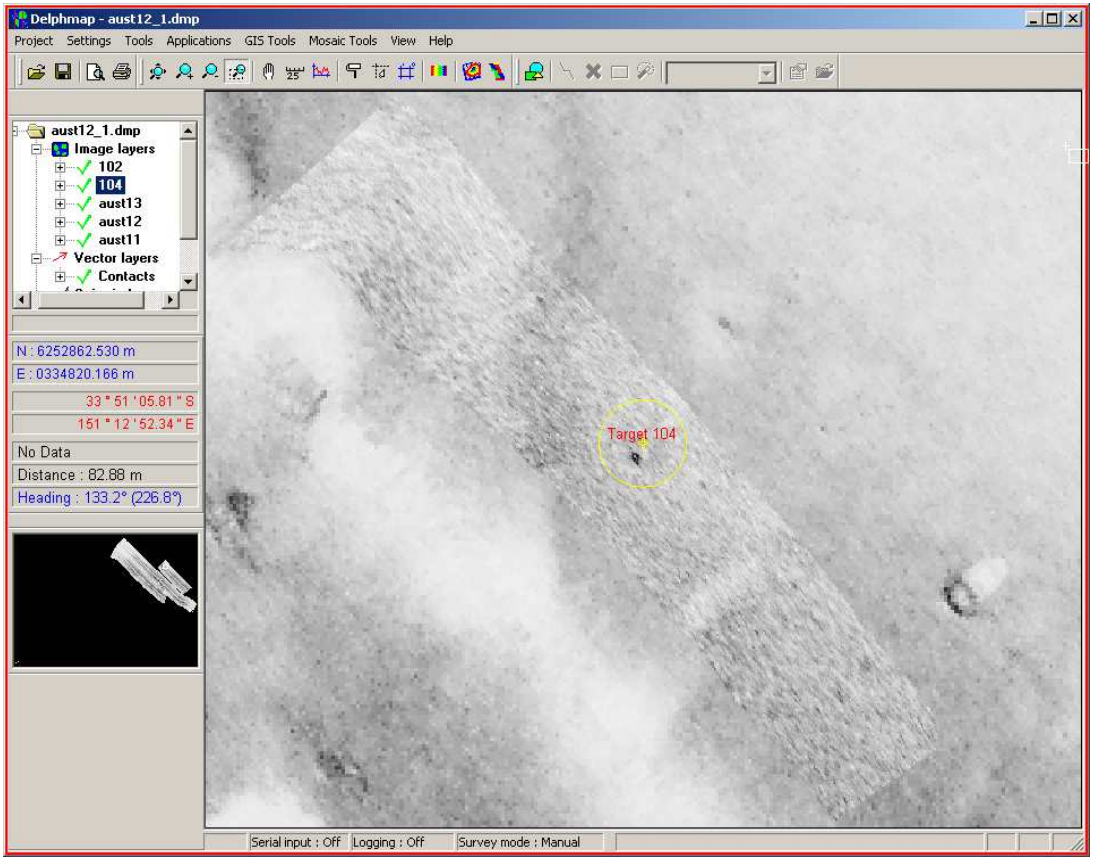



***FIGURE 20. Imported 2D Contact***

**To import a Contact directly from Target or TargetPro**

1. Before importing a contact or contacts, go to the main menu of DelphMap and choose **Settings→2D Contacts** to set up how the contacts will be imported. The setup includes whether or not to create a geocoded image, where to store the geocoded image, selecting the input geodesy, and choosing the size of the confidence radius. See Figure 19, the 2D Contacts dialog box.

For more information on each option, see ***Additional Display Aids, General Settings Menu from Main Menu***.

2. From within TargetPro, go to **Tools→Configuration** and put a check mark in the Miscellaneous box labeled ***Import Saved Contact in DelphMap***. Be sure DelphMap is open with the proper projection.

3. From within Target, when you select **F9** or **File→Save**, you will have the option of checking a box labeled Display this contact in DelphMap. If you put a check mark in the box, the contact will be sent to DelphMap.

## Inspecting Properties of Contact Files

If you have purchased Triton Elics's Isis Sonar software or Target software, DelphMap gives you a way of inspecting the properties of Target contact files right from DelphMap. Your system also must have Microsoft's Data Access Object (DAO) capability installed.[1]

### To view a contact file's properties from DelphMap

1. While viewing imagery in which you already have imported a contact file (***'Working With Layers Inserted into a Project File'***), right-click on a target marker.

   (Contact markers in DelphMap imagery are marked with a small cross. To see target markers, you might have to enlarge your displayed imagery by zooming in on them.)

   The system displays the Target Info Viewer dialog box (Figure 21).

2. In the Target Info Viewer dialog box click **Load Target** to run the Target software utility. Alternatively, instead of clicking **Load Target**, you can click **Close** if all you want to do is get a quick idea of the target's location and the fish's attitude as it is reported in the Target Info Viewer dialog box.

---

1If you don't have DAO installed but would like this capability, contact Triton Elics International for instructions. (Triton's addresses and phone numbers are in the front of this book.)

The system displays the image of the contact and its annotation dialog box, complete with quantitative data for several kinds of parameters that pertain to the contact.

For the fullest documentation covering the Target software utility, refer to the ***Isis Sonar User's Manual, Volume 2***, and refer to the ***Using TargetPro*** user's manual.

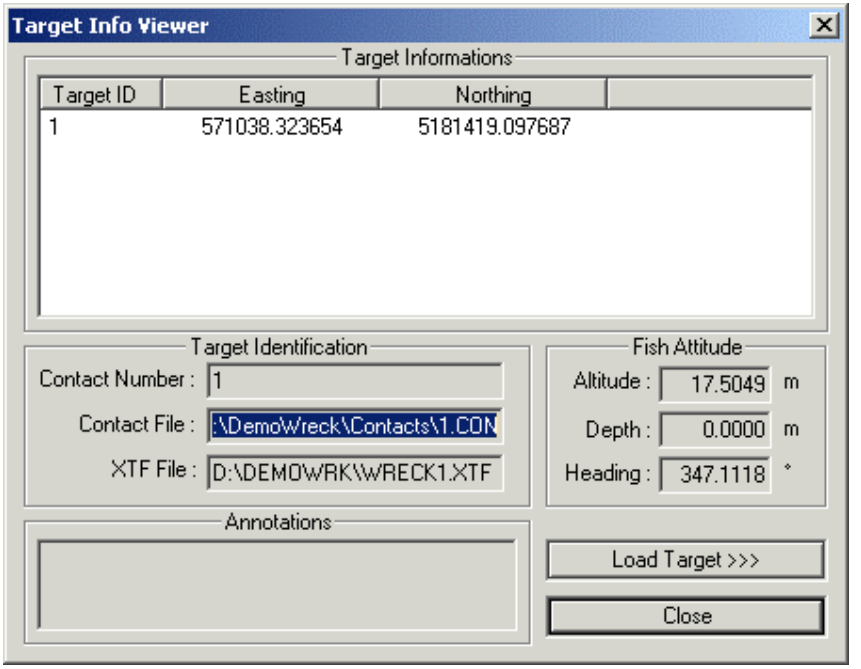



***FIGURE 21. Target Info Viewer for DelphMap***

**To close Target and DelphMap's Target Info Viewer dialog box**

Do in either order:

- After you have finished using Target to inspect the contact, click **Close** in the Target Info Viewer dialog box to exit the dialog box.
- Close the Target utility.

## Isis Echoing to DelphMap

This function echoes cursor selections in Isis to DelphMap. When a user left-clicks anywhere in the Isis waterfall window, not only is the Isis Cursor information updated, but markers are placed in DelphMap at the corresponding position.

These echo markers, in the shape of blue crosses, appear in DelphMap, providing DelphMap is open and a projection established. All but the last echo marker selected will be erased when the DelphMap window is resized in any way (pan, zoom out, zoom extents, etc.). To erase the last echo marker, use the refresh button in DelphMap. Echo markers are temporary and are not saved once DelphMap is closed.

## Importing a Pipeline or Pipespan File

This feature is under development.

## Importing a Classification File

Named, tagged features in a seabed that have been saved as a classification files in the **DXF** format can be imported into DelphMap as layers.

**To import a classification file**

1. From the main menu choose **Project→Import→Import Classification File**.

   The system displays a Projection Settings dialog box.

2. If you need to change any of the input or output settings, click **Change**, which takes you to additional dialog boxes (such as **Input** or **Output Projection Settings→Select Projection→Select Datum**); or, if you know the settings are already correct, click **OK**.

   The system displays a Browse for Folder dialog box.

3. Select a folder to contain all the files that the system will create and associate with this importation and click **OK**.

The system imports the **DXF** file containing the seabed classification information into the current Digit layer. Figure 22 shows an example of this kind of imported file.

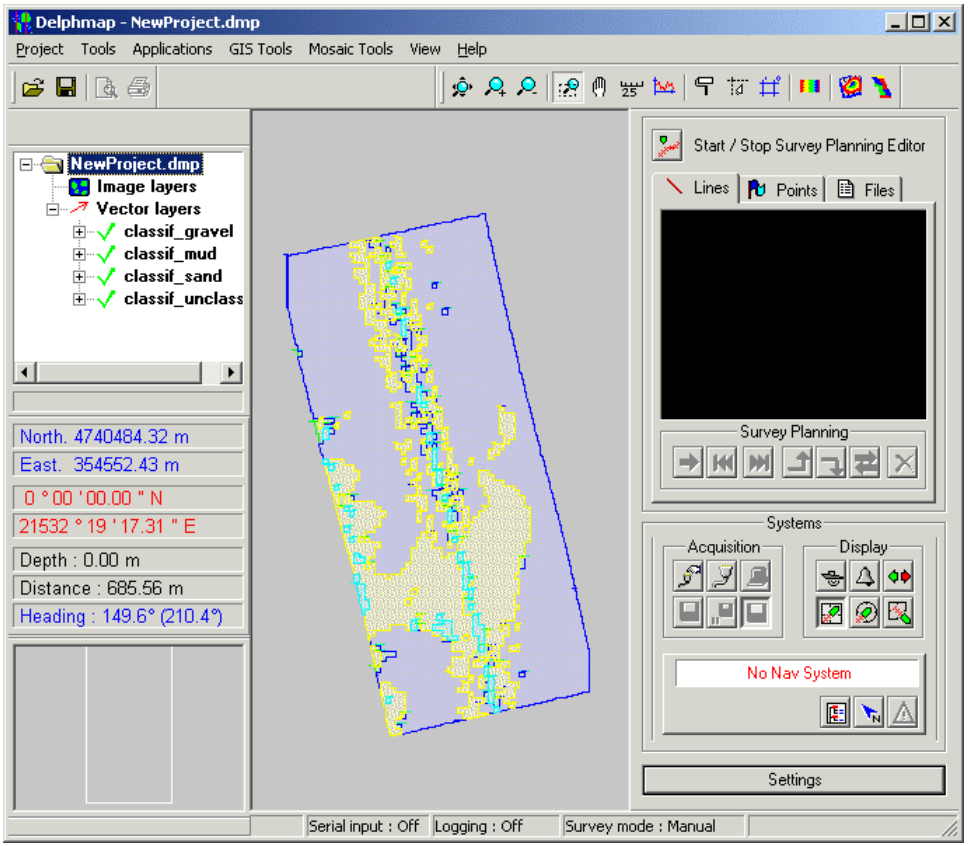



***FIGURE 22. Imported DXF classification file example***

Areas of the imported classification are shaded to show differences. You can have DelphMap bring out more detail in the imagery, show the labels for the various seabed aspects, and assign colors to those labels by manipulating the properties of the various layers. You make these changes one layer at a time. See ***'To assign colors to labels or objects in layers'*** for the technique of changing a layer's colors.

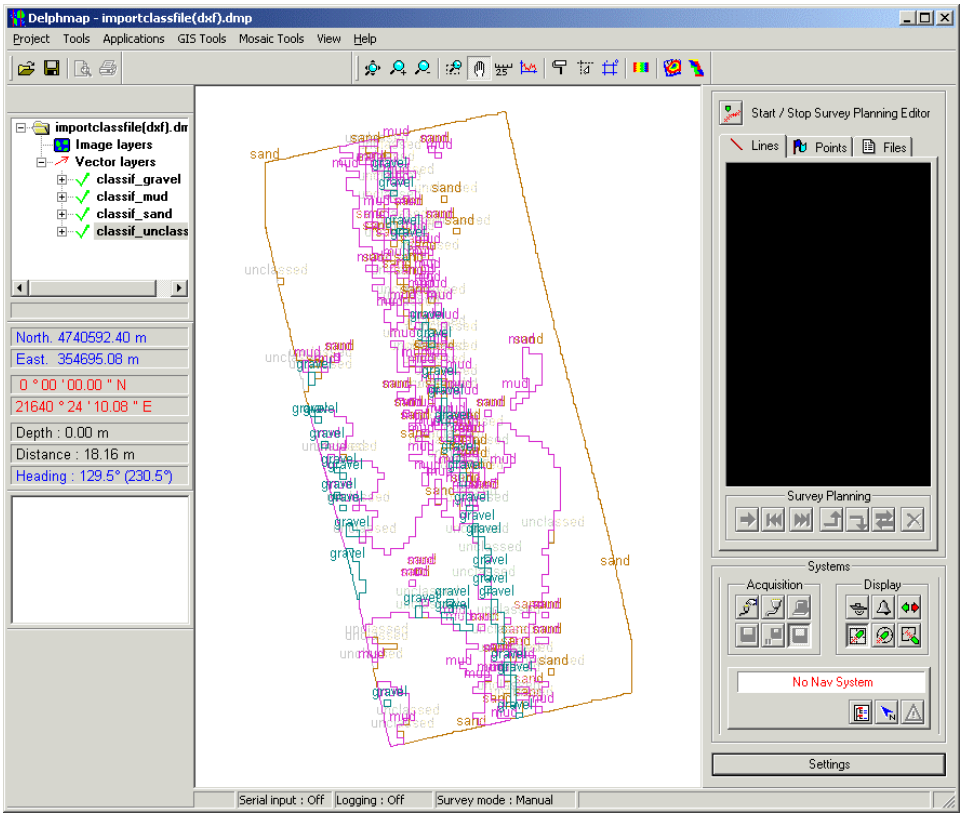



***FIGURE 23. Classification file fully labeled and colored — example***

A seabed classification file imported and color-coded this way will display its seabed objects cleanly differentiated from each other. Notice that this method reveals more information than the technique of just importing the single DXF file as a layer (but not as a classification file). If you were to do the latter, your seabed classification would not show the desirable differentiation you get with the methods just explained. (You could, of course, still import the various other layers that are present in your classification file, but that is a more tedious method of achieving the same thing as represented in Figure 23.) Figure 24 shows an example of the same kind of file imported into DelphMap, via the technique of right-clicking on a layer name and choosing **Insert layer(s)**, but without the benefit of separate colors for the various classified objects in the seabed.

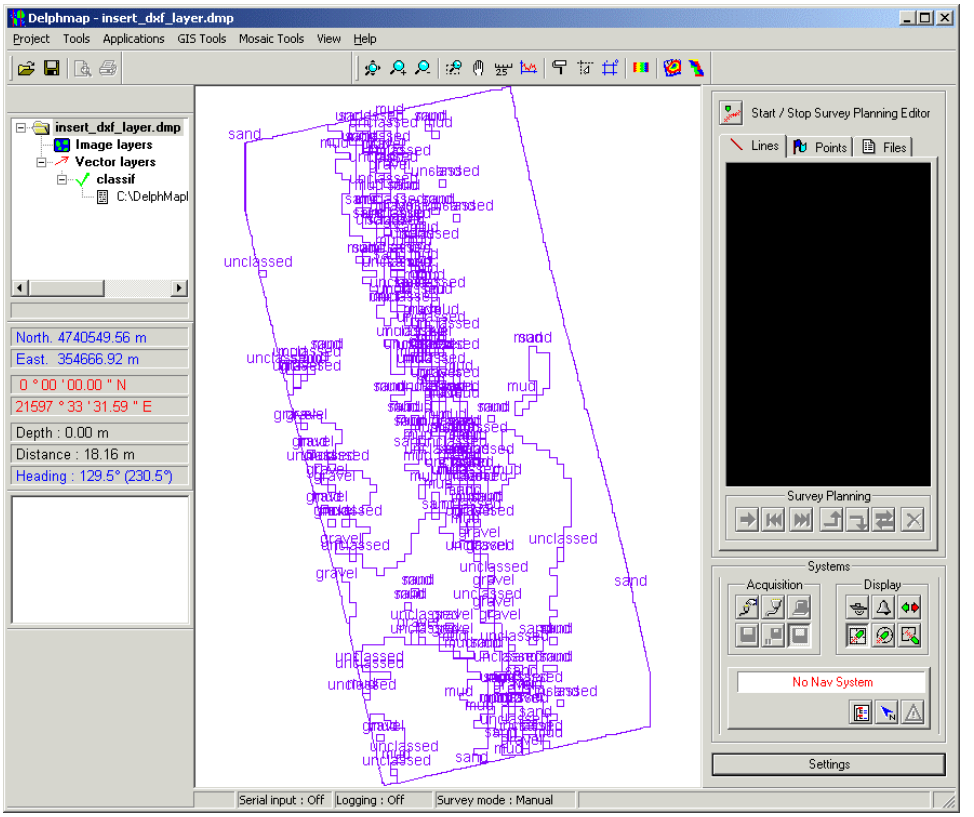



***FIGURE 24. DXF layer inserted without benefit of classifying colors***

## Importing an ASCII Point or Line File

Importing an ASCII file of points with or without labels into DelphMap is done through the Digit toolbar. These imported points are then associated with the Digit layer. Changes to symbols and colors can be done through the **Vector→Properties** settings. See ***'Setting Properties for a Digit Type of Vector Layer'***.

**To import an ASCII file of points with labels**

1. The ASCII file must be in the following format:
   - Label
   - Easting, Northing (any non-numeric delimiter is accepted)
   - Label
   - Easting, Northing

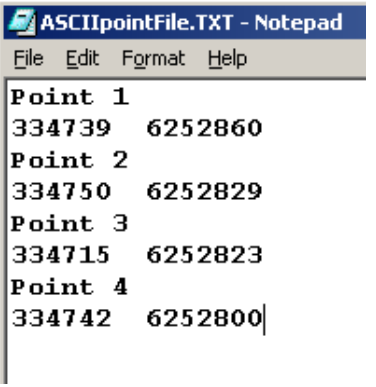



***FIGURE 25. Example of an ASCII point file to be imported***

2. Make Digit active by selecting **Tools→Digit**, or simply click the icon on the toolbar.
3. Select the **Import objects from an ASCII file** icon from the Digit toolbar (shown here at the side of the page):
4. Open the ASCII file.

5. Define the X and Y positions and units. Then click OK.

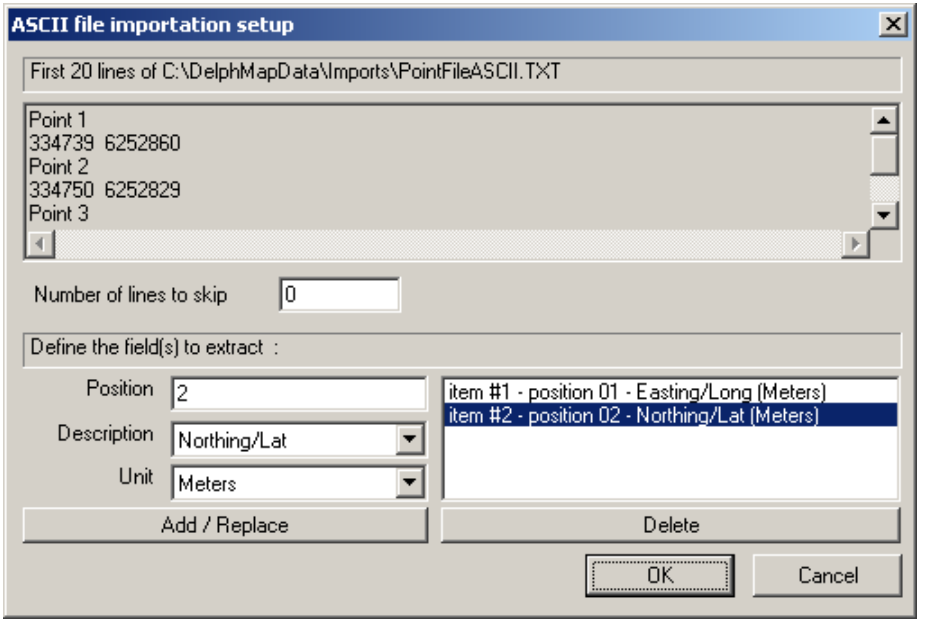



***FIGURE 26. ASCII file importation setup dialog box***

6. You will then be asked to define the geodesy of the ASCII file. The projection of the ASCII file must be the same as that of the DelphMap project.
7. Once the points have been entered, you can change the point symbols and colors with the **Digit→Properties**. See ***'Setting Properties for a Digit Type of Vector Layer'***.

**To import a line from an ASCII file**

- To import a line defined by ASCII points, the method is the same as to import ASCII points with labels, only the ASCII file format is as follows:

  *Label*

  *X, Y*

  *X, Y*

  *X, Y*

  (If no label is required, omit the label in the ASCII file.) The ASCII line can have up to 1000 points.

### Importing a Seismic Profile

See the Triton Elics International technical manual called ***Using SGIS***.

## *Merging and Exporting Side-Scan Layers*

If two or more layers from the same geographic area are present in your DelphMap imagery, you can merge them. Once merged, the merged layers, and all the data in them, can be treated as a single entity — one file. This becomes a convenient unit to work with if you know you are going to export the merged file so that it can be used in some other non-DelphMap application.

**To merge two or more displayed image layers**

1. From the main menu, choose **Tools→Merge Image layers**

   The system displays the Merge layers dialog box (Figure 27).

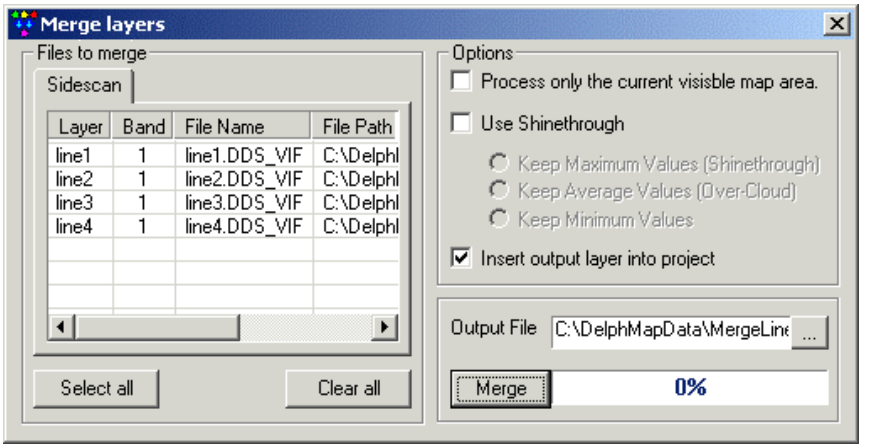



***FIGURE 27. Merge layers dialog box, initial display***

2. In the **Files to merge** panel, CTRL-click on two or more files to merge, thereby selecting them. You can also click the **Select all** button to include all listed files to be part of the merged file. Clicking **Clear all** unselects any selections already made.

3. Decide which options, if any, you wish to apply to the files to be merged:

   - **Process only the current visible map area**: When checked, this option means the merging will affect just the area displayed in the Main Display Window. When unchecked, this option will process the entire areas of all lines, regardless of how it looks in the Main Display Window. The default is to have this unchecked.

   - **Use Shinethrough**: See ***'Changing the Way Layers Are Viewed'*** for an explanation of these choices. The default is to have this unchecked (no shinethrough).

   - **Insert output layer into project**: If you check this box the results of your merged layers can appear in its own layer. The default is to have this box checked. Whether or not you put a check mark in this box, the system will save a DDS_VIF file of

the merged results to your working directory if you do the merge operation. It is that file which can be exported to another application. The system names the saved merge file using the format **Merge*n*.DDS_VIF**, where ***n*** starts at 1 and increments by 1 for any additional merge operations you perform in this project.

You're ready to merge your files after you have selected the total number of lines and the options to be applied to them.

4. Click **Merge** in the Merge layers dialog box to merge your files.

   The system displays a dialog box (Figure 28) prompting you to supply a layer name to contain the merged files.

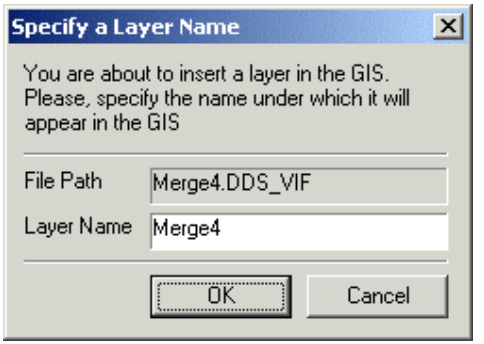

Specify a Layer Name
You are about to insert a layer in the GIS. Please, specify the name under which it will appear in the GIS
File Path
Merge4.DDS_VIF
Layer Name
Merge4
OK
Cancel

***FIGURE 28. Merge layer name prompt dialog box***

5. Click **OK** after supplying an appropriate layer name to hold the merged files.

   The system processes your selected files and merges them. If you had put a check mark in the **Insert output layer into project** option of the Merge layers dialog box (step #3), the system also displays a new layer name to your list of layers in your Project Window after the files have been merged. That layer can be exported from DelphMap so that other applications can open it and use it.

**To export a merged layer**

1. If the merged layer isn't yet inserted into your Project Window, insert it. (See ***'Inserting One or More Layers'***.)
2. Export the layer according to the instructions in ***'Exporting a Layer as a File'***.

   The system exports your file to your working directory.

## Exporting a Layer as a File

Any layer you have imported into DelphMap can be exported out of DelphMap as a TIF or DXF file. If you're exporting from an image (raster) layer, DelphMap can save the exported layer as a GeoTIFF or TIFF file. If you're exporting from a vector layer, DelphMap can save the exported layer as a DXF or SHP file. The exported file can then be imported into any application capable of reading, and perhaps editing, the file.

**To export a layer**

1. From the Project Files Window select (highlight) a ***layer name of a layer type*** — either image or vector — that contains the underlying layer's file name to be exported. The layer will have a green check mark denoting a displayed layer) or a blank box denoting a hidden layer).
2. Right-click on the layer type and choose **Export As** .

   The system displays a Save As dialog box and shows a suggested file name based on the primary name of the file in the layer. The file name's extension does not appear.

3. Either accept or rename the primary name of the file in the layer and choose a file type from the **Save As type** part of the dialog box.

   You do not have to provide the file extension in the box where you specify the file name; DelphMap will provide the appropriate file extension for you if you omit it. You can also specify or browse for a directory different from the currently displayed choice.

   If you are exporting an image (raster) layer, the **Save As type** choices are **GeoTiff Image** or **TIFF Image**. If you are exporting a vector layer, the only available file type in the **Save As type** part of the dialog box is **ASCII Autocad Files (*.DXF)**.

4. Click **Save**.

   DelphMap saves the named file according to the file type you chose. If you chose either a GeoTIFF or TIF file type, DelphMap

simultaneously saves two files: a TIF version of the layer and a supporting TFW file. The latter is known as a ***world file*** which contains the geo-referencing associated with the TIF file. Please refer to Chapter 8, ***'TIFF and GeoTIFF Differences'***, for a more expansive discussion of this topic.

The TIF or DXF file thus saved can now be opened in applications capable of reading the saved file.

## Creating a Target TIF File in DelphMap

You can create a target from within DelphMap with a double right-click. This will generate a target with a label consisting of the line name and an incremental number {Linename_increment.tiff}, such as line45_1.tif. The file generated is a TIF file, not a .con file and is added to the vector ***Contacts*** layer.

# Chapter 4 Managing Layers

DelphMap has several controls for manipulating displayed imagery. This chapter explains those controls and how to print your DelphMap image. Finally, this chapter explains some of the issues about GeoTIFF, which is one of the geo-referenced imagery file types that can be exported from DelphMap.

## *Working With Layers Inserted into a Project File*

After you have inserted one or more layers into your project (***'Loading, Viewing, and Moving Layers'***), you can manipulate the layers in certain ways. All of these effects are achieved either from main menu choices or by right-clicking on a Project Files Window entity to reveal more menu choices applicable to the selected entity.
Here are actions you can perform on displayed layers:

- **Insert layer(s)** Adds a layer to the DelphMap work space (Chapter 1).
- **Import contact** Brings a Triton Elics Target contact file into DelphMap. Refer to ***'Inspecting Properties of Contact Files'*** for more information.
- **Import Pipe/Span** This feature is currently under development.
- **Import Classification File** Use it to generate a map of the surrounding seafloor.
- **Import Seismic Profiles**. This feature accepts **DDS_VOB** files as input.
- **Merge Image layers** Joins two or more layers into one layer entity. Only image layers can be merged; vector layers cannot be merged.
- **Project Information** Reveals the boundaries, grid spacing, datum, hemisphere, projection, and zone number for the displayed data. You can export this information to an ASCII file by clicking Export to an ASCII file in the Project Information window. The information will be written to a text file in the working directory. The file name is based on the DelphMap project name with an addition of _info. For example: ***survey1_info.txt***.
- **Remove layer** This function removes the selected layer from the window.
- **View layer** Displays a single chosen layer, apart from any other layers that may be present in the Main Display Window.
- **Display layer** When checked, this function displays the named layer in the Main Display Window and in the Overview Window. When

unchecked, the layer is hidden until rechecked. View Layer windows, if any are open, are unaffected by checking or unchecking.

- **Map Layout** From this function you can assign a title and subtitle to the currently displayed image in DelphMap. You can also set the scale to be used for printing and set a map rotation for printing, if desired.
- **Cursor Value Layer** If you are working with a bathymetry layer, you can get DelphMap to display the depth of the layer at the cursor position. See ***'Establishing a Cursor Value Layer'*** for the technique to do this.

Recall that the hierarchy of the entities displayed in the Project Files Window is as follows, from top to bottom level: **project name (**as user-defined ***filename*.DMP)→**(image or vector) **layer type→**(user-defined)**layer name of the layer type→**(user-defined) **file name of the layer**.

Some of these choices are available from the Project menu (accessible from the main menu); other choices can only be accessed if you right-click on an entity in the Project Files Window. When you right-click a Project Files Window entity, the system displays a small menu of choices appropriate for that entity. These are shown next in a series of six paired graphics.

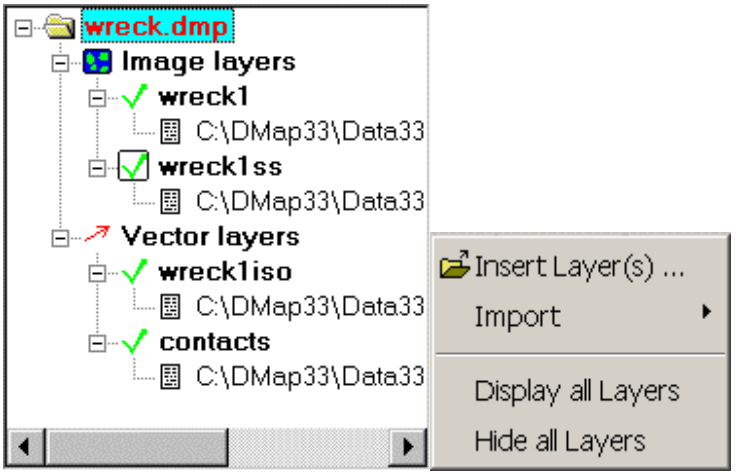



***FIGURE 29. Right-clicking a project name***

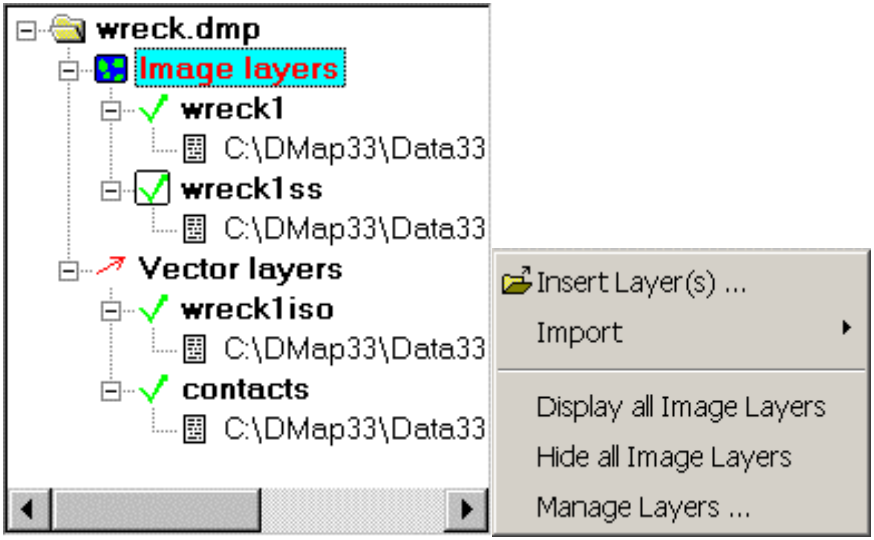



***FIGURE 30. Right-clicking the layer type called image***

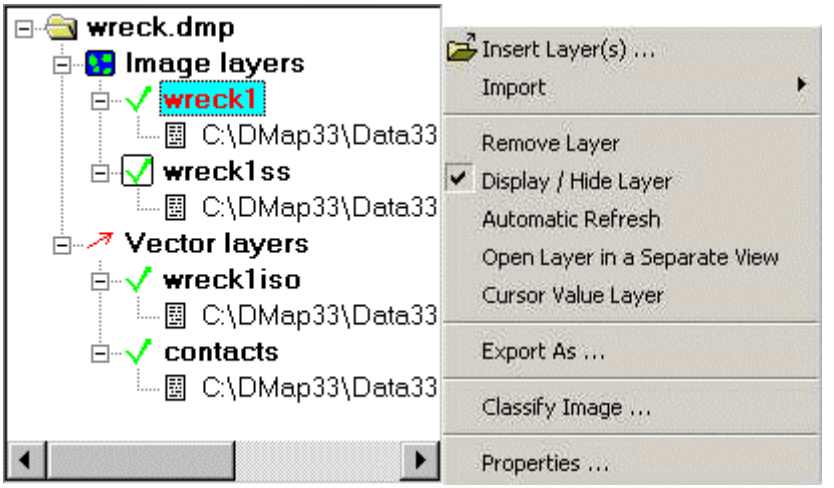



***FIGURE 31. Right-clicking the name of an image layer***

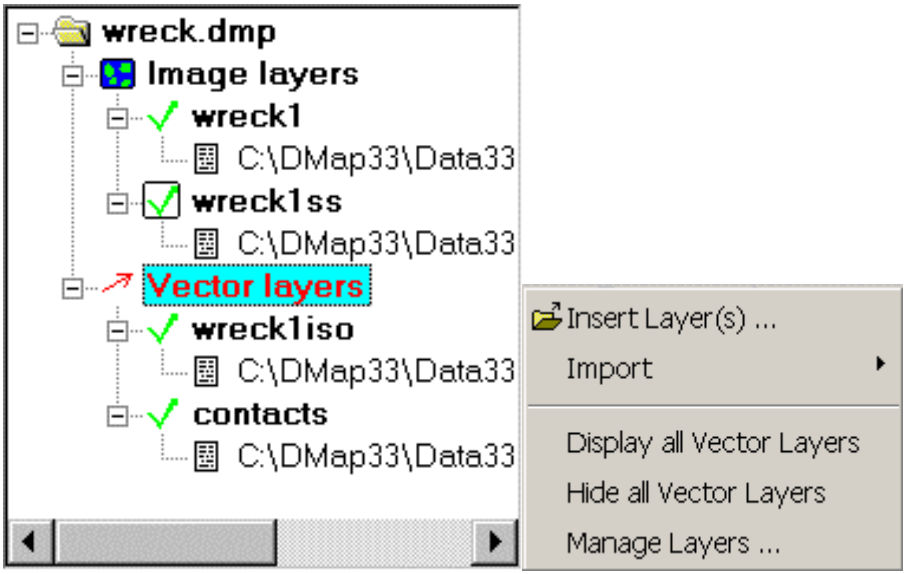



***FIGURE 32. Right-clicking the layer type called vector***

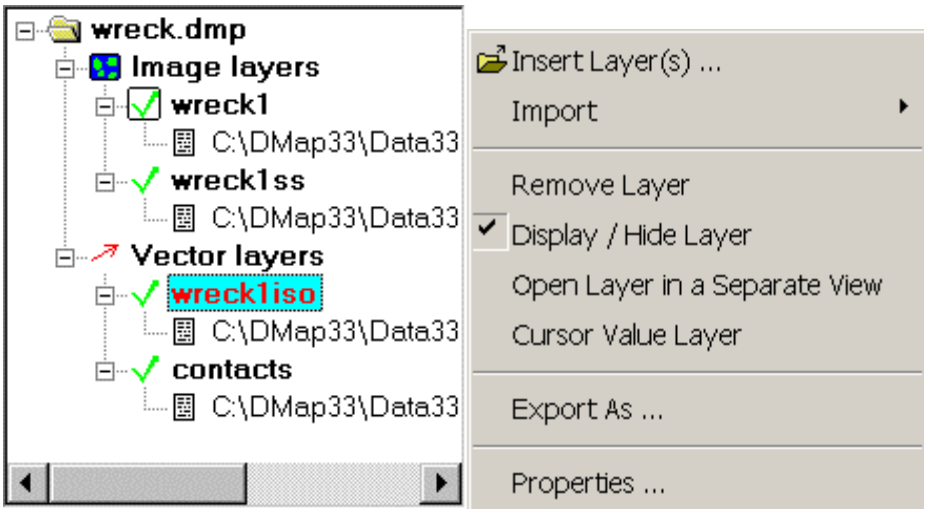



***FIGURE 33. Right-clicking the name of a vector layer***

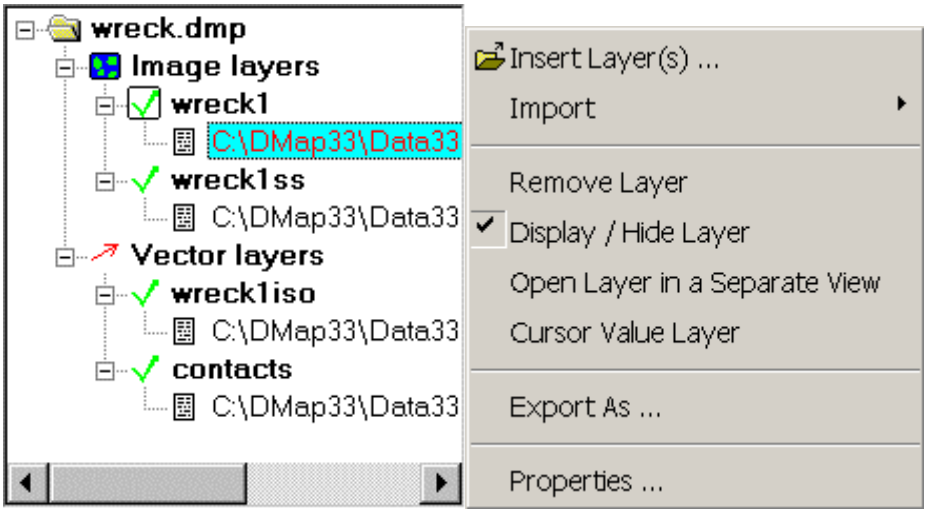



***FIGURE 34. Right-clicking on a file name in any layer***

# Loading, Viewing, and Moving Layers

As already noted, DelphMap can process and display bitmapped, vector aspects, and ASCII DXF forms of your imagery, if these are present. You need to load each aspect explicitly before DelphMap can do anything with them. This task is called ***inserting layers*** into the project file. Inserting a layer is the most basic thing you can do in DelphMap.

## Inserting One or More Layers

You can insert layers into DelphMap in any order — image layers before or after vector layers before or after contact layers before or after background layers, for example.

If you import an image layer, you get a raster display; if you import a vector layer, you get a vector display, and so on. Also, if you move your pointer over the main display area, the information in the Position and Distance window is updated instantly.

Of course, DelphMap can insert native DelphMap 2 file formats (***DDS_VIF*** and ***DDS_VOB***) and DelphMap 1 formats (***AIF*** and ***VOB***) as layers into imagery. In addition, DelphMap accepts some file formats originating outside of DelphMap that can be inserted into DelphMap imagery as layers. Those file formats are ***DXF*** (from ASCII AutoCAD), ***CLA*** (from QTC), and ***SHP*** (from ESRI).

**To insert a DelphMap file as a layer**

1. Choose **Project→Insert layer(s)** from the main menu (or right-click on the project name in the Project Window).

   DelphMap displays a dialog box where you can browse or type a file name.

2. Choose a file type appropriate to your needs. Your choices are:

   **DelphMap 2 layers (*.DDS_VIF; *.DDS_VOB)**
   **DelphMap 1 layers (*.AIF; *.VOB)**

After you choose a file type, DelphMap displays a dialog box of layer information (Figure 35) referencing the file you chose in step #2.

There are two versions of the Specify a Layer Name dialog box, one smaller than the other. The smaller version has a single box labeled **Layer Name**. The larger version has two boxes labeled **Layer Name**.

Which version of the dialog box you get depends on the contents of the layer you are inserting.

For the fuller version of the Specify a Layer Name dialog box, the upper **Layer Name** portion of the dialog box suggests a layer name to be associated with the file you are inserting. The lower **Layer Name** portion of the fuller dialog box contains a spin box (▼) of layer types that could be associated with the layer name. DelphMap derives that information from the contents of the file you are trying to insert as a layer.

3. In the Specify a Layer Name dialog box, provide a layer name. If the dialog box has a spin box of layer types for the layer you are inserting into DelphMap's main display window, also make a selection from the available types.

In the fuller version of the Specify a Layer Name dialog box, if you change the layer name type (bottom spin box), DelphMap changes the suggested name in the upper layer name box to a name that more closely matches the type of layer you are selecting in the lower layer name box. You can accept the suggested name in the upper box or type over it with a name more to your liking.

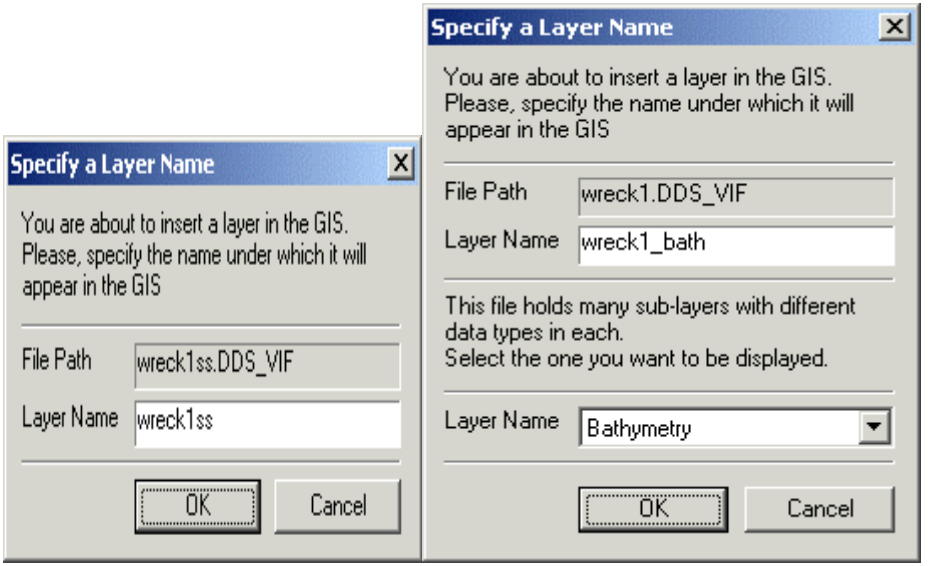

Specify a Layer Name
You are about to insert a layer in the GIS. Please, specify the name under which it will appear in the GIS
File Path
wreck1ss.DDS_VIF
Layer Name
wreck1ss
OK
Cancel
Specify a Layer Name
You are about to insert a layer in the GIS. Please, specify the name under which it will appear in the GIS
File Path
wreck1.DDS_VIF
Layer Name
wreck1_bath
This file holds many sub-layers with different data types in each.
Select the one you want to be displayed.
Layer Name
Bathymetry
OK
Cancel

***FIGURE 35. Two versions of the Specify a Layer Name dialog box***

4. Click **OK** in the dialog box after you have provided the layer name information.

DelphMap inserts the layer into the Main Display Window and updates the Project Files Window with the layer name and the file name associated with it. Figure 36 shows an example of this.

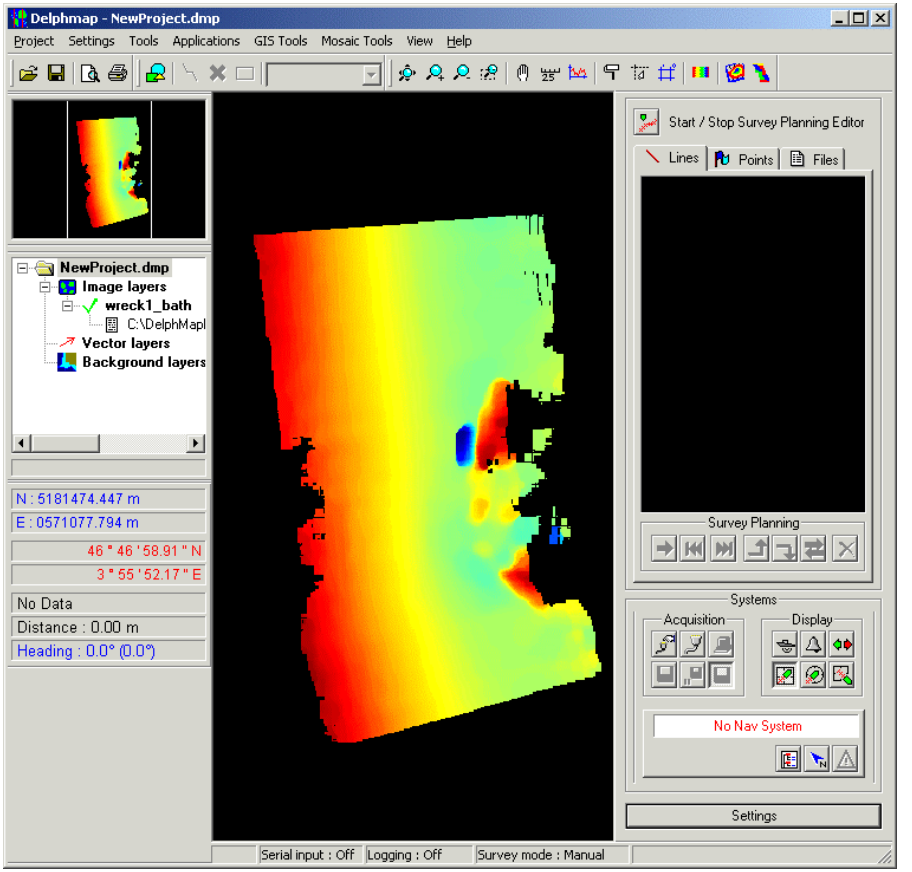



***FIGURE 36. One layer inserted into a DelphMap project***

**To insert a non-DelphMap file as a layer**

1. Choose **Project→Insert layer(s)** from the main menu (or right-click on the project name in the Project Window).

   DelphMap displays a dialog box where you can browse or type a file name.
2. Choose a file type appropriate to your needs. Your choices are:

   - **ASCII AutoCAD Files** (*.DXF)
   - **QTC files** (*.CLA)
   - **ESRI ArcView shapefiles** (*.SHP**)**

***Note:*** For the DXF format, the only supported objects are POLYLINE, LINE, LWPOLYLINE, POINT, TEXT, and MTEXT.

   If you choose a DXF and SHP file type, DelphMap displays a message window telling you:

   - DelphMap will convert the file to a VOB file type to make it compatible with DelphMap.
   - A DXF or SHP file cannot hold a projection.
   - The layer you are about to insert will be assumed to contain the same projection information as your project (or else you will have to supply the projection to DelphMap at the time you are inserting the layer).

3. Click **Yes** or **No** to acknowledge the message.

   DelphMap displays a new dialog box prompting you to browse for a folder to contain the files to be created.
4. From the list of available choices in the dialog box of folder choices, choose an appropriate folder. (Note that folders cannot be created from this dialog box, so your target folder must already exist.)

   DelphMap displays a dialog box where you can specify input and output projections.
5. If you need to change a projection, do so by clicking **Change** and supplying the relevant information associated with this layer.
6. Click **OK** when you have finished with the Projection Settings dialog box.

If you are inserting a SHP file, DelphMap displays a dialog box where you can specify which field in the SHP file shall be used to create a label to be associated with your DelphMap imagery (Figure 37).

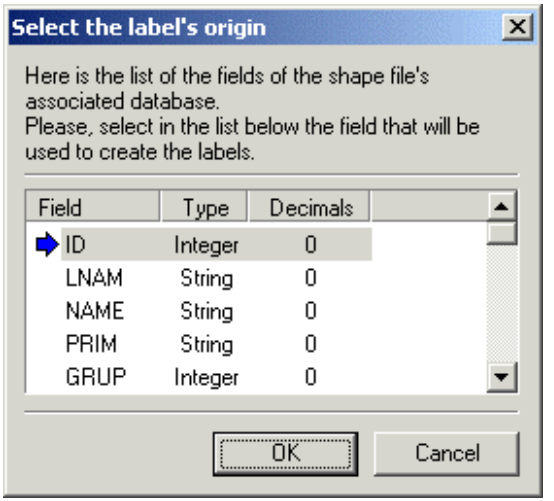



***FIGURE 37. Partial, typical list of fields found in a SHP file***

The name, type, and number of fields in the Select the label's origin dialog box will vary according to the contents of the SHP shapefile you are inserting. In order to make an intelligent choice among the choices available in this dialog box, you have to know beforehand what those fields represent. DelphMap has no way of interpreting that for you.

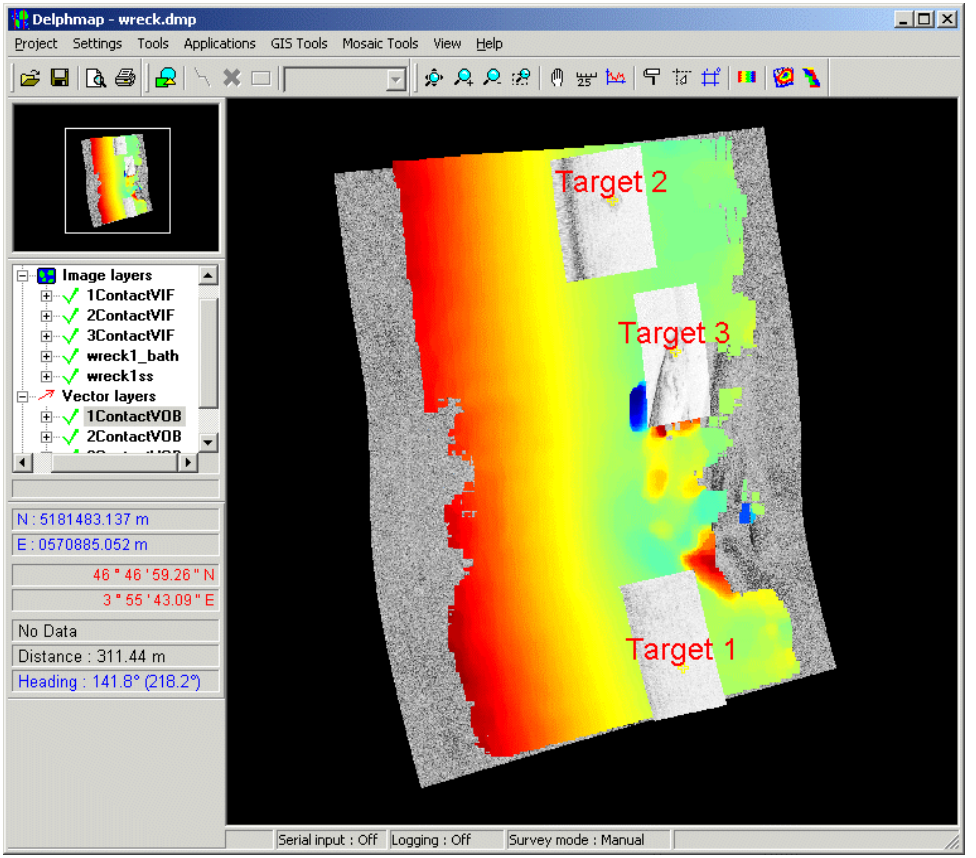



***FIGURE 38. Multiple layers inserted into a DelphMap project***

In Figure 38 notice that the Project Files Window becomes scrollable when the number of inserted layers exceeds the fixed display space of that window.

## Identifying Mosaicked Images

When an XTF file is mosaicked in Isis, several files are generated:

- ***Filename.DDS_VIF***. This is the mosaicked imagery and can be imported directly into Del_phMap.
- ***Filename_track.DDS_VLB***
- ***Filename_track.DDS_VOB***
- ***Filename_track.DDS_VTX***

These are vector files that are created from the sensor's navigation information. When imported into DelphMap a trackline is drawn with the file name as a label.

When multiple image layers are inserted into DelphMap, it can sometimes become difficult to identify the individual mosaicked layers. One way to help identify the layers is to insert the associated "track" files with their labels, essentially labeling each mosaic. The tracklines are inserted as a vector layer and the user can select to have the layer name default to the file name or choose a different name.

## Viewing Layers

To view a layer means to display just that layer, apart from any other layers that may be present in the Main Display Window. This makes the position of features in any given layer more apparent by simple visual inspection. You can create a maximum of four View Layer windows. The image in the Main Display Window is not affected by this function.

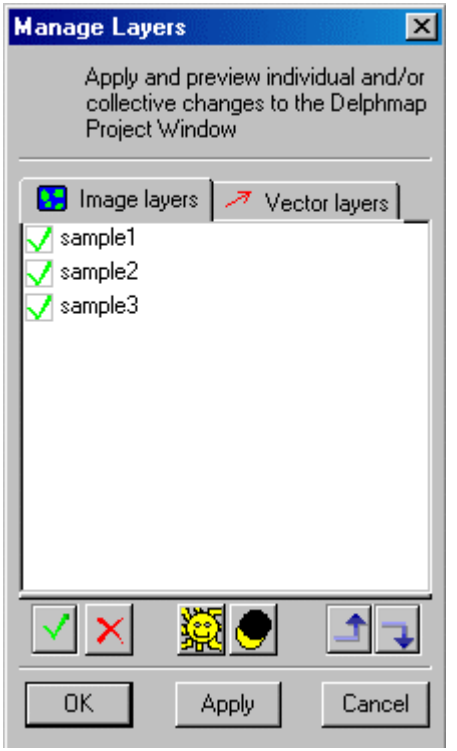
**To view a single layer apart from other layers**

- In the Project Files Window, double-left-click a layer name.

The system opens a small, resizable window displaying just this layer. If the white cross cursor has been enabled, any cursor movement done in the Main Display Window is visually synchronized with the images in the View Layer windows. The echoed cursor movement is a good way to quickly determine whether some feature appearing in the Main Display Window also appears in a given layer, since you can place your cursor on a feature appearing in the Main Display Window and then see if the feature also appears in the independently viewed layer. The number of separate windows that can be opened is limited to four.

## Layer Manager

The Layer Management dialog box is evocable from three locations: an icon on the toolbar, through the Tools menu, and through the menu options when right clicking in the project window.




When Manage Layers is activated, the adjacent dialog box opens. There are individual tab windows for each layer type (i.e. image and vector). Only those layers that are present in the project will appear in a tab. For example, if there aren't vector layers entered in the project, then only the tab for Image layers will be present. Likewise, the manage layer dialog cannot be activated until there are layers in the Project Window.

The layer manager can be used to apply and preview changes to the project window. All layers can be toggled for displayed by clicking the sun icon, , or hidden by clicking the eclipse icon, . In the layer manager window, once the user has selected (highlighted) a single layer there are three options:

Click the green check mark icon to toggle for displayed/ hidden or the user can click next to the layer itself.

Click the red "X" icon to remove the file from the Project, or hit the Delete key.

Change file position by clicking the corresponding up/ down arrow icon, , or dragging and dropping one or more layers in the list itself. Multiple layers can be selected by holding down the <CTRL> or <SHIFT> and clicking on the layers.

Once a layer status has changed, the user can select the **Apply** button to preview the changes in the Project Display Window. The user can also click the **Cancel** button to lose all changes made in the Manage Layer dialog box. Please note that once the **Apply** button has been selected those changes cannot be removed from the Project Display by selecting "Cancel".

Within the project menu, the user can toggle between Display and Hidden modes for individual layers by selecting the <CTRL> key and clicking with the left mouse button clicking on the check mark next to the layer name. Also, once the layer is selected, it can be removed from the project by hitting the Delete key.

## *Establishing a Cursor Value Layer*

If you are working with a bathymetry layer, you can get DelphMap to display the depth of the layer at the cursor position. A layer so marked is said to be a ***cursor value layer***. There can be only one cursor value layer in a DelphMap project, but you can reassign the current cursor value layer to a different bathy layer.

**To establish a cursor value layer**

1. Right-click on a layer's name or its type and choose **Cursor Value Layer**.

   The system puts a box around the layer's display status marker — that is, around the green checkmark or a nothing next to the selected layer name. The box denotes that the selected layer is the cursor value layer.

2. Perform the Manage Layers function to move the layer name to the top of the set of layer types. See ***'Rearranging the Viewing Order of Layers'*** to review the technique. When you have designated the bathy layer as a cursor value layer, the depth of the layer at the cursor position shows up in the Position and Distance Window.

3. While moving your cursor in the cursor value layer, observe that the Position and Distance Window reports the present depth of the layer at your cursor's position. Figure 40 shows an example of a layer name designated as a cursor value layer and the depth reported in the Position and Distance Window.

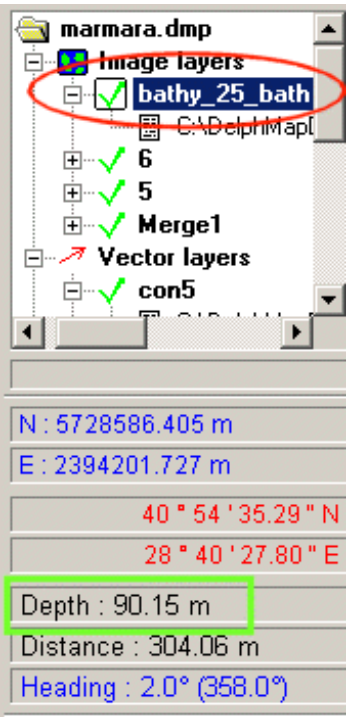



***FIGURE 40. Cursor value layer example, reporting depth at cursor***

***Note:*** Although it is possible to have DelphMap designate a sidescan layer as a cursor value layer, it is meaningless to do so, since sidescan layers do not have depth. Only bathymetry layers have the property of depth, so only bathymetry layers can show depth in the Position and Distance Window.

## *Changing the Way Layers Are Viewed*

Without needing to reimport or rearrange two or more layers in your displayed project, you can change the way layers are viewed by changing the way layers overlap (or don't overlap) each other. DelphMap has four viewing methods for displaying multiple layers:

- **No Shinethrough (Use Z-Order)**: The viewing order follows the order the layers were imported into the project. As a result, the topmost layer

is dominant and subordinate layers cannot shine through. This is the DelphMap default.

- **Shinethrough – Min**: The lowest value of all pixels falling within a grid cell are used. Consequently, features in the imagery that were ensonified from ***weak or soft*** sonar returns have more opportunity to "shine through" layers.
- **Shinethrough – Average**: The average value of all pixels falling within a grid cell are used. Consequently, no one layer dominates in the display, and all prominent features in all layers have an equal chance to "shine through" layers. However, even slight differences in navigation occurring on adjacent lines can obscure features somewhat, so this type of shine-through is not used very often.
- **Shinethrough – Max**: The highest value of all pixels falling within a grid cell are used. Consequently, features in the imagery that were ensonified from ***strong*** sonar returns have more opportunity to "shine through" layers. This option is probably the most useful when you are mosaicking data containing well-defined, prominent targets.

**To change the shine-through overlap method**

- From the main menu, access **GIS Tools→Display** mode and choose a shine-through method. There is no icon equivalent to access this function.

## *Simulating ROV Flight or Dredging Routes*

If you record your data as one or more XTF files and you have or had a Remotely Operated Vehicle (ROV) or dredge equipment on the data survey, you can simulate the route.

**To use ROV Flight or Dredging simulation in playback mode**

1. From DelphMap's main menu, access one of these paths:
   - **Applications→Rov Flight→Playback→Start**
   - **Applications→Dredging→Playback→Start**

   The system displays the Select input projection dialog box.

2. Choose an appropriate input projection for the data you are going to play back and click **Next**.
3. Choose an appropriate input datum for the data you are going to play back and click **Finish**.

4. Specify an XTF file to open in the dialog box that is displayed after you clicked **Finish**.

   The system displays the ROV or Dredging symbol in the main display window and the device's navigation position in the Data Display child window. Figure 41 shows an ROV symbol in the main display and the Data Display child window to its left.

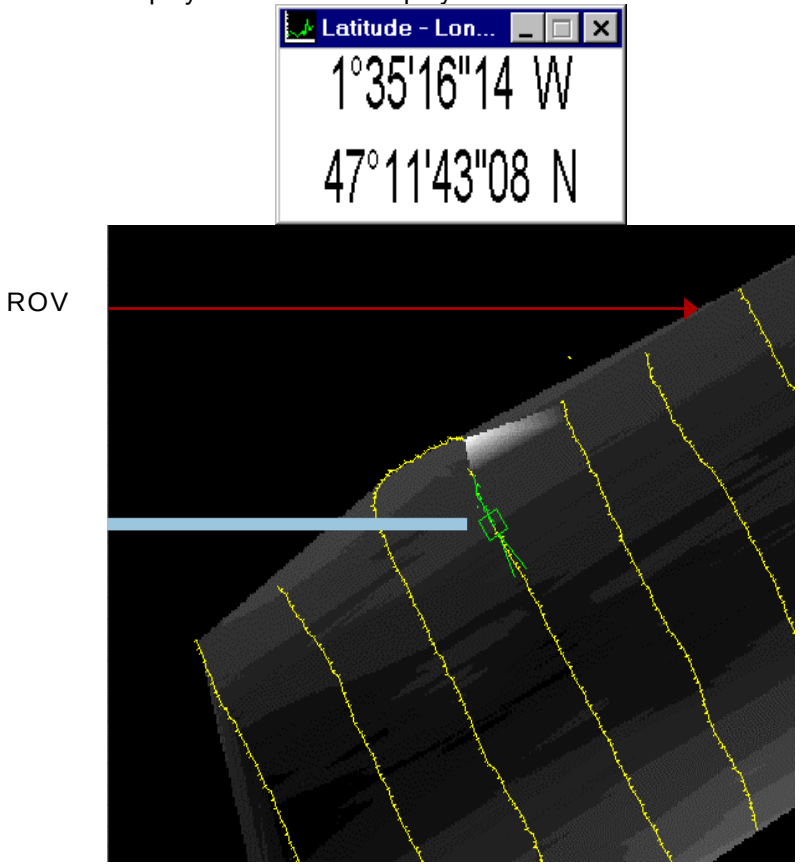



***FIGURE 41. ROV symbol activated on imagery, with nav data***

The nav data is updated as the ROV moves along track in your imagery. Speed of the ROV movement varies according to the speed of your computer. Slow machines will show the movement in time-delay fashion.

Fast machines will show the movement in an apparently smooth continuum.

**To use ROV Flight (or Dredging) in record mode**

1. Connect your sensing device to an appropriate serial port on your computer.
2. From DelphMap's main menu, choose either:

   **Applications→Rov Flight→Real Time→Serial input→Start**
   **Applications→Dredging→Real Time→Serial input→Start**

3. Select the correct path for the serial server.
4. Select the correct COM port and click **Apply**.
5. Minimize the server software.
6. In the Serial Port Data Acquisitions Settings dialog box, select the correct message type and port; click **ON** and **Apply**.

   As long as the incoming position matches the geographical area in your DelphMap project files, the system displays the ROV or Dredging symbol on your screen.

## *Changing Other ROV (or Dredging) Symbol Properties*

You can also change and display certain properties of ROV and dredging operations in DelphMap. For example, you can change the size of the symbols used to represent ROV and dredging activity. This is especially useful if you are playing back a large XTF file because these symbols tend to be small and get lost in the image field.

You can control other aspects of ROV and dredging activity via the ROV Flight and Dredging submenus.

- In Playback Mode, you can **Pause**, **Stop**, **Loop the Files List**, or play back at **High Speed**. In Data Display Mode, you can have DelphMap display separate windows called **Main Data Display**, **Compass**, **Single Beam Profile**, and **Alarms**.

- In Boat Display Mode, you can choose to keep the ROV or dredge symbol confined to DelphMap's main display window, or centered in the main display window, or allow the symbol to go outside of the main display window.

- Finally, you can specify that the ROV or dredge activity send an event or annotation to the Single Beam Profile display.

All these options for manipulating ROV or dredging properties originate from DelphMap's Applications menu (Figure 42).

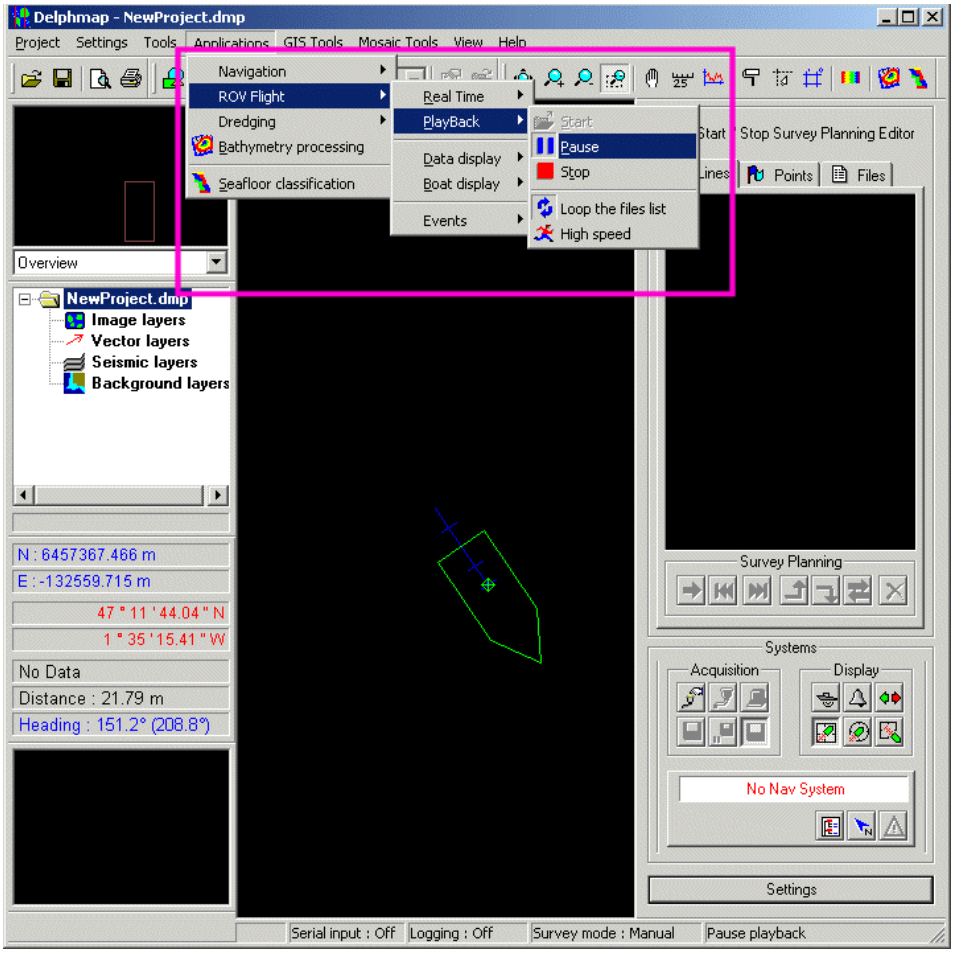



***FIGURE 42. Access paths for ROV Flight and Dredging functions***

**To change the size of the ROV (or Dredging) symbol**

1. From DelphMap's main menu choose either:
   - **Applications→ROV Flight→Playback→Start**
   - **Applications→Dredging→Playback→Start**

2. Specify new values in one or more of the Shape text boxes and click **OK**.

## *Viewing a Single Beam Profile for ROV Activity*

DelphMap also has a control for viewing single beam profiles when ROV Flight is active.

**To view a single beam profile while ROV Flight is playing back**

- From the main menu choose **ROV Flight→Data display→Single beam profile**.

The system displays the Single Beam Profile information box (Figure 43).

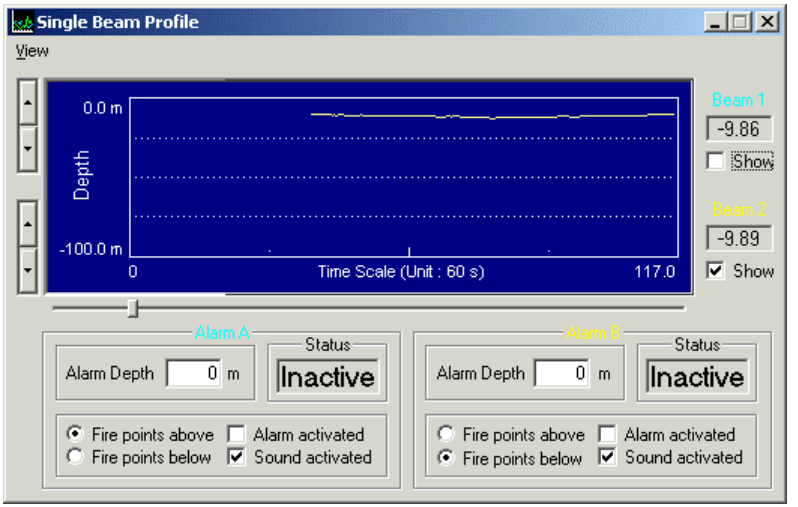



***FIGURE 43. Single Beam Profile information box***

The system displays a profile of a single beam as the ROV tracks over the imagery. You can select or deselect Beam1 and Beam2. You can also change the scale of the viewed beam(s) by clicking on the ▲ and ▼direction indicators at the left side of the box. The slider bar at the bottom of the dialog box is used to view the beam's progress at various times of its tracking. Move the bar to the right to see the beam's progress at later times of the playback; move the bar to the left to see the beam's progress at earlier playback times.

# Chapter 5 Working with Three-Dimensional Contacts

You can get an approximate three-dimensional model of selective parts of your DelphMap imagery by double-left-clicking on any part of a side-scan or bathymetry layer. The significance of this is that if you have both sidescan sonar imagery and topography imagery from bathymetry layer present in your project, the sidescan sonar imagery can be "draped" over the bathymetry layer. (There is no need for the two layers to be at the same resolution.) When you do, DelphMap displays your three-dimensional image in a separate window. The peaks and valleys that form the resulting three-dimensional-like image are based on amplitude differences from the sonar returns. Thus the peaks and valleys do not represent true height on the seafloor; instead, they are showing signal strength differences in the imagery.

Using DelphMap's three-dimensional Contact window you can:

- inspect the model from different angles by moving it up, down, left, right, or diagonally.
- suppress or enable apparent resolution while moving your three-dimensional model
- change the vertical scale or reset the viewpoint position of the three-dimensional contact model
- display the three-dimensional contact in gridded form, solid form, or as seen by a "flat" sonar return
- take a snapshot of the three-dimensional window and save the results into any of four graphic formats
- update the model with a real-time mosaic
- view or suppress the implied light source that gives shape to the three-dimensional model
- reposition the light source to show different modeling of the three-dimensional image
- move the directional indicator to any part of the three-dimensional Contact window
- view or suppress a three-dimensional cursor showing your current position in the three-dimensional model

**To make a three-dimensional contact**

- Double-left-click in your imagery.

A three-dimensional image of the area that you clicked on appears in a separate three-dimensional Contact window. Figure 44 shows an example of a three-dimensional contact.

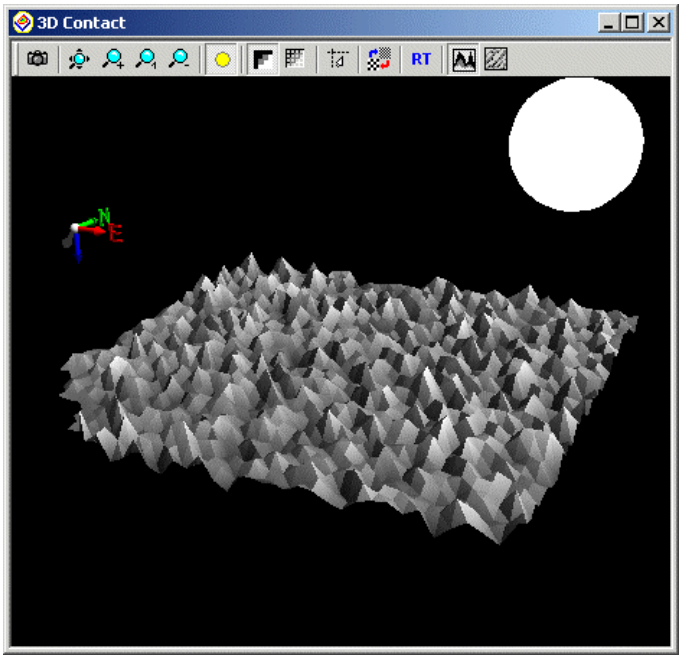



***FIGURE 44. Three-dimensional contact with light source position***

The hypothetical light source used to generate the image of Figure 44 is represented by the big white disk in the picture. A solid surface representation, with the light source revealed, is the DelphMap default for viewing three-dimensional contacts. A compass indicator reveals the directional orientation of the displayed image. Several icons specific to the three-dimensional Contact window border your three-dimensional image at the top. These are explained in Table 2.

**TABLE 2. Three-dimensional contact icons, meanings**

| Icon | Icon's 'Tool Tip' Identity and Meaning |
|---|---|
| | **Snapshot**: If you click this icon, DelphMap:<br>creates a snapshot of the current three-dimensional contact image,<br>saves it to your working directory in the format indicated in your three-dimensional Settings dialog (See ***'To change settings for three-dimensional contacts'***), and<br>displays a copy of the saved image in the three-dimensional contact window. A basic caption identifying the contact are imprinted on the saved image.<br>An example appears in Figure 45. |
| | **Reset to Viewpoint Position**: In the course of manipulating your three-dimensional image (perhaps by right-clicking and dragging in the three-dimensional window), occasionally you may find that all or part of your three-dimensional image is no longer fully inside the three-dimensional Contact window. Click this icon to recenter the image in your three-dimensional Contact window. |
| | **Increase the Vertical Scale**: This exaggerates the highs and lows of the undulations being used to represent the three-dimensional model. You might want to use this feature if your topography was mostly flat, to make the differences between highs and lows stand out more distinctly |
| | **Reset the Vertical Scale**: If you increased or decreased the vertical scale while viewing your three-dimensional contact, use this icon to quickly get back to a "neutral" view of your imagery, where the vertical scale is neither emphasized nor de-emphasized. |

| | |
|---|---|
| | **Decrease the Vertical Scale**: This de-emphasizes the highs and lows of the undulations being used to represent the three-dimensional model. If the terrain being shown in your three-dimensional contact is especially rugged, this icon can help you "tame it down" so that you can see more details in the imagery |
| | **Switch the Light On/Off**: Click this icon to turn the light source on or off. The three-dimensional view of the image is retained whether the light source is on or off. The default is for the light source to be switched on. |
| | **Solid Surface**: Clicking this icon results in an apparent three-dimensional view of the imagery in the contact window, such as the view in Figure 45. This is the default view |
| | **Gridded View**: A gridded view results in a more transparent look of your three-dimensional contact imagery. |
| | **Turn Cursor On/Off**: This icon, when enabled, displays two yellow cones that appear to converge at their mutual apexes, thereby suggesting the vertical intersection of your pointer through the imagery. |
| | **Decrease Resolution While Moving**: Big images use lots of random access memory. If you are trying to re-orient a large image (high resolution) in your three-dimensional Contact window, enabling this icon makes it possible for you to adjust the image to some other position faster than would happen if this icon were not enabled. The image will have a soft focus while it is being moved, but the apparent resolution returns when you have stopped moving the image |
| | **Update the model with a real-time mosaic**: If you have Isis, you can use this function to have Isis create a real-time mosaic and have DelphMap drape the resulting side-scan mosaic, also in real time, on top of your bathymetry image in DelphMap |
| | **Display Sonar Return**: Clicking this icon transforms the view of your three-dimensional contact into a "flat earth" representation. |
| | **Flat Display of Sonar Return**: Clicking this icon gives you a view of your three-dimensional contact resembling a "flat earth." |

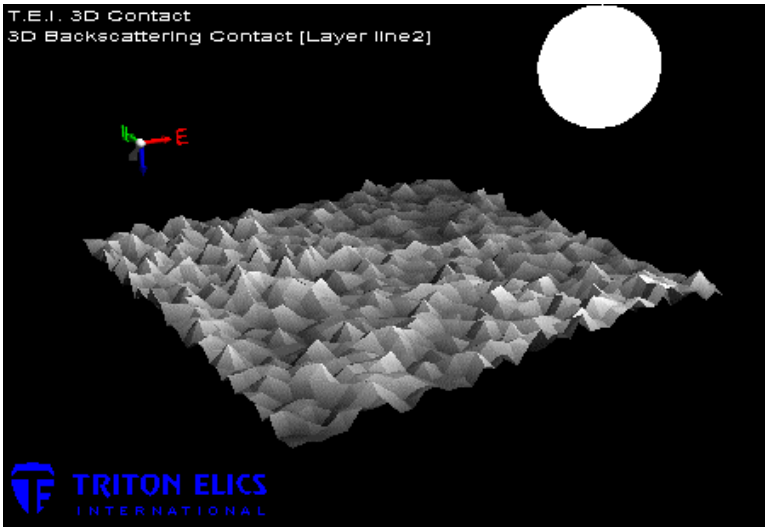



***FIGURE 45. Snapshot taken of a three-dimensional contact***

Through combinations of keystrokes and pointer clicks, you can manipulate your three-dimensional contact in a number of ways:

- If you left-click and drag your pointer in any direction: The three-dimensional contact rotates about its Y-axis. The Y-axis is temporarily displayed during the movement. (Initially, the point of intersection of the Y-axis into the imagery is centrally placed.) The compass and light source update their positions to stay synchronized with the new view.
- If you right-click in the three-dimensional imagery and drag your pointer in any direction: The three-dimensional contact shifts the image along the same plane as the pointer's movement. This movement also displays and shifts the Y-axis by the same distance that your pointer moves. The image does not rotate. The compass and light source positions are unaffected by this movement.
- If you hold down the <CTRL> key and drag with your trackball's or mouse's left button: The light source shifts in the direction you drag. The three-dimensional image remains fixed in its current size and position, but the light source moves in the direction and distance you drag. Imaginary arcs of latitude and longitude that the light source can travel on are displayed during the movement.

- If you hold down the <SHIFT> key and drag with your trackball's or mouse's left button: Both the light source and the imagery rotate synchronously about the Y-axis in the direction that you drag. The size of the imagery does not change during this movement. Imaginary arcs of latitude and longitude that the light source can travel on are displayed during the movement.
- If you hold down the <SHIFT> key and drag with your trackball's or mouse's right button: The compass indicator moves in the direction and distance that you drag. The imagery and light source are not affected by this movement.
- If you hold down the <CTRL> and <ALT> keys and drag with your trackball's or mouse's left button: The light source rotates about the current Y-axis and increases or decreases its radius from the Y-axis according to the direction and distance you drag. The position of the three-dimensional image remains fixed in size and position during this movement.

**To change settings for three-dimensional contacts**

1. From the main menu choose either:
   - **Settings→3D Contacts** or
   - **Settings→All Settings** and then select the **3D Contacts** tab.

   Figure 46 shows the dialog box.

2. In the 3D Contacts Size panel, choose a size you believe adequate for an area you wish to cover as a three-dimensional contact.

***Note:*** Displaying three-dimensional contacts can be memory-intensive. If you get a DelphMap message that says you don't have enough memory to view your imagery three dimensionally, adjust the northing and easting extensions in the 3D Contacts Size fields of the 3D Contacts dialog box to use smaller extents. The default size is 10 meters.

In this dialog box you also can specify one of four file formats to be used for any snapshots of three-dimensional imagery that you make: **BMP** (the default), **TIF**, **TGA**, or **PCX**.

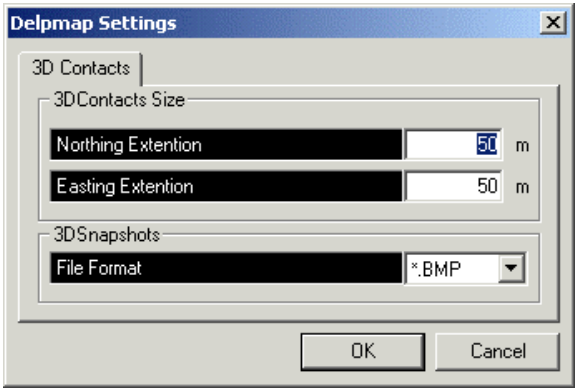



***FIGURE 46. 3D Contacts dialog box***

# Chapter 6 Displaying Image Profiles

## *Overview*

Normally, you view your imagery in DelphMap from the top down ("bird's-eye" view). DelphMap can also display your imagery in a side view. This is called a **Display Profile.** The view takes the form of a single line showing the height and breadth of whatever area you are profiling. While it is possible to get a display profile from any DDS_VIF layer that has been designated as a cursor value layer, a sidescan image only will show a profile of pixel values, since sidescan images contain no topographical data.

**To create and display a profile of part of your imagery**

1. Set an image layer to display the **Cursor value layer** by right-clicking on the layer name. See ***'Establishing a Cursor Value Layer'*** for the technique of setting a cursor value layer.
2. Click the **Display a profile of the image** icon. (There is no menu equivalent.) The icon is shown here on the right:
3. Left-click in your imagery and move your cursor across an area for which you wish to create a profile.

   As you move the cursor in the described way, the system drags a line or lines in the chosen direction.

4. Left-click again when your line covers the full length of the area you are profiling.

   The system displays the Display Profile window with your profiled area in it.

5. If you intend to profile an area by a series of lines, left-click at the terminus of a line and start a new (connected) line in a new direction.

   The displayed profile continues to be generated in the Display Profile window according to any additional lines you may have drawn.

   Figure 47, Figure 48, and Figure 49 show examples of displayed profiles.

If your profile is just that of a bathy layer, you get a profile showing just depth. The layer's name appears in the upper right corner of the displayed profile. Figure 48 shows an example of this.

If you move your pointer from the imagery in the Main Display window to the Display Profile window, the system might draw a line in your imagery without an apparent termination point (i.e., the end of the line lacks a green box). Such an unterminated line is not part of the display's profile; it's just a stray line. You can ignore it.

If you put your pointer in the Display Profile window, a vertical white line with a white circle on it interects the profile line. As you move your pointer, the circle moves along the profile line and is constrained to it, indicating your position along the profile. At the same time, your geodetic position, either in northings and eastings or in latitude and longitude, also is shown numerically in the status bar. The starting and ending points of your reported navigation data remain fixed for the displayed profile, unless you return to the main display window and extend any existing line, thus extending the display profile.

6. If you decide to stop using this function during this procedure, click the icon again to return the icon to a non-selected state. (Choosing a different icon also deselects this function.)

## *Profiles Derive Information from Layer Types*

The kind of information you get in your display profile depends on the type of layer you've drawn on in your main imagery:

- If your display profile is just that of a sidescan layer, the system displays an amplitude graph. The points of the amplitude graph represent the signal strength of the pixels along the path drawn in the imagery that were used to generate the profile. Again, the layer's name appears in the upper right corner. Figure 47 shows an example of this kind of graph.
- If your display profile is just that of a bathy layer, the system displays a depth graph. Figure 48 shows an example of this kind of graph.

- If your profile is a mix of sidescan and bathy layers, the displayed profile has panels for both amplitude (for sidescan layers) and depth (for bathy layers). Figure 49 shows an example of that kind of graph. In the example, notice that the amplitude signal is absent beyond 50 meters into the profile of the sidescan data, but that the bathy profile continues for the remainder of the profile. This indicates that the user's profile started somewhere in the sidescan data layer but then went beyond an edge of the sidescan data. The bathy data, on the other hand, persisted for the entire profile in the example, so the bathy layer covered more area than the sidescan layer.

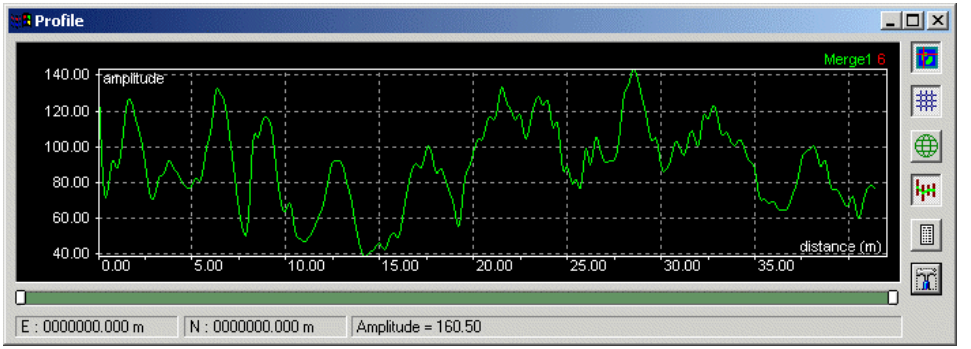



***FIGURE 47. Amplitude profile of a side-scan layer***

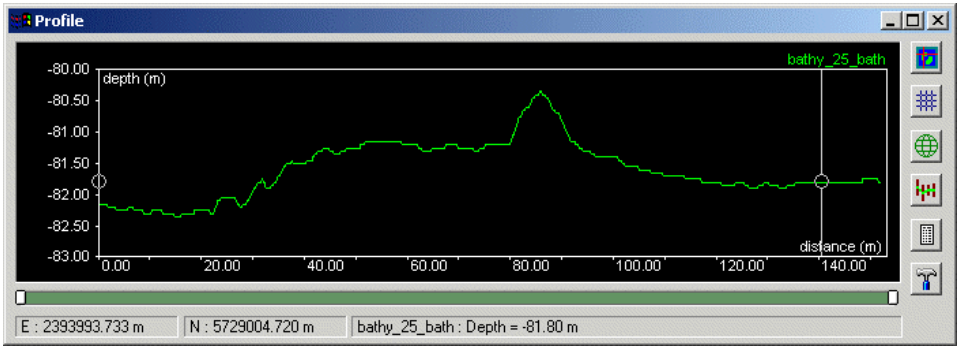



***FIGURE 48. Depth profile of a bathy layer as a display profile***

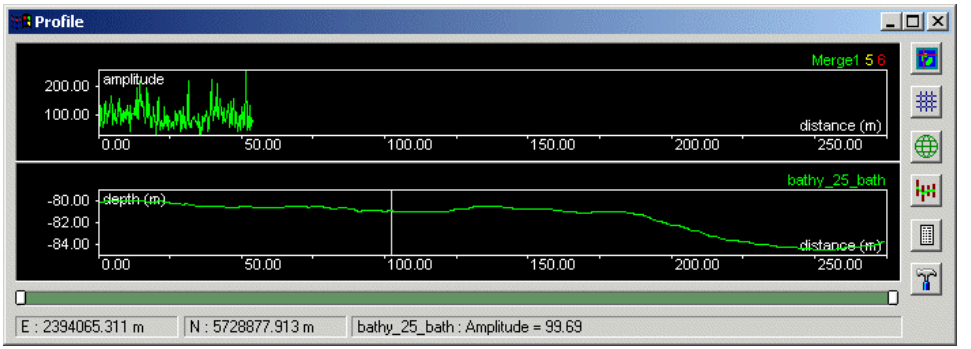



***FIGURE 49. Amplitude and depth reported in a display profile***

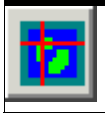
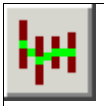
## *Changing the Look of Your Display Profile*

After you have generated your profile, you can put your pointer in the Display Profile window to perform other actions on the profile. From the generated profile you can:

- enlarge the DelphMap image so that the profile line spans the entire image
- superimpose a grid on the profile
- change the coordinate units from northings and eastings to latitude and longitude, or vice versa
- smooth or unsmooth the profile line(s)
- generate and save a report file
- change setup parameters so that the displayed profile shows different metric units or different colors for named parts of the Display Profile window
- change the profile's apparent field of view and/or point of focus

Six iconized buttons on the right side of the Display Profile window are available for performing these actions. A slider bar at the bottom of the window also can influence the shape of the displayed profile. (For an explanation of the slider bar, see ***'Changing Field of View and Point of Focus'***.)

**TABLE 3. Display Profile icons and what they do**

| Icon | Icon's Meaning |
|---|---|
|  | **Remote Zoom**: This enlarges the image in the main display to the extent of the profile line. The profile line transverses the length of the imagery from one border of the main display to its opposite border. |
| | **Coordinates Units**: This toggles the geodetic status information between displaying navigation location in eastings and northings or latitude and longitude |
|  | **Enable Smoothing**: When enabled, a smoothed line displays points on the lines that are easily identifiable. This is especially useful in an amplitude graph because smoothed lines (the default) make it easier to see the amplitude's numerical value at any given point on the line. |
| | **Generate a Report File**: Use this function to have DelphMap create and save a file either as plain text or as a comma-separated file suitable for importing into applications such as Excel. format. |
| | **Profile Setup**: Clicking this icon leads to a Profile Setup dialog box (Figure 52) where you can customize certain aspects of the displayed profile. |

## *Changing Profile Setup Parameters*

In addition to the icons noted in Table 3, DelphMap provides a dialog box for changing other facets of your display profile. This gives you a way to further customize your display profile.

**To examine and change the current profile setup values**

1. In the Display Profile window, click the **Profile Setup** icon (right).

   The system displays the Profile Setup dialog box (Figure 50).

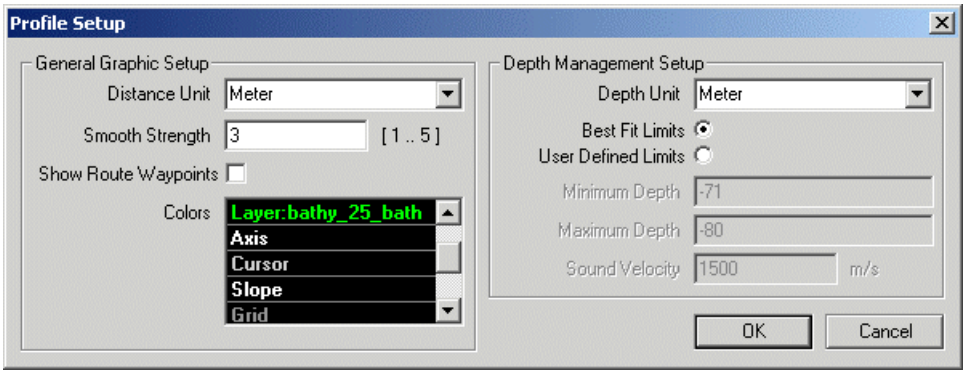



***FIGURE 50. Profile Setup dialog box***

As the Profile Setup dialog box shows, you can:

- specify distance units (meters, kilometers, feet, or U.S. survey feet, or nautical miles)
- specify smoothing strength (1–5, where 1 is the least amount of smoothing and 5 is the most)
- include or exclude route waypoints in your displayed profile (a check mark in the box includes the waypoints; a cleared box excludes them)
- specify the units for displaying depth data (meters, feet, or U.S. survey feet)
- let DelphMap optimize the display of your graph to take full advantage of the available space in the Display Profile window (**Best Fit Limits**)
- override the **Best Fit Limits** with your own minimum and maximum depth values, forcing DelphMap to mask out areas not within your parameters, thus emphasizing the detail of a select portion of a layer's profile

2. Click **OK** to register your profile setup changes to the system.

## Changing Field of View and Point of Focus

A slider bar at the bottom of the Display Profile window can be manipulated to change the profile's apparent field of view and its apparent point of focus into the profile. The Field of View slider bar has two white movable handles. Initially these handles are at the far ends of the slider bar (as shown in Figure 47, for example). Initially the bar is all green, indicating that the bar (and thus the graph) is fully expanded. When the bar is moved left or right of an imaginary center point, the point of view is shifted left or right accordingly.

Figure 51 shows the slider bar (shown with a rectangle around it to call attention to the slider bar). In the example, the field of view has been changed to show a narrow field of view and an off-center point of focus skewed slightly to the right.

***FIGURE 51. Field of View slider bar in a Display Profile window***

**To change the profile's apparent field of view**

1. Put your pointer on either of the slider bar's white handles and drag left or right.

2. Stop dragging when you reach a desired field of view.

   Initially, therefore, you will be able to drag handles only toward the center of the slider bar; thereafter, you can move handles left or right. The red part of the slider bar indicates a part of the profile that is no longer in your field of view in the Display Profile window. As you move the slider bar the horizontal scale of the profile line changes to reflect the shifted, apparent field of view. Furthermore, the profile line compresses or expands in synchronization with the dragged slider bar handle.

**To change the profile's apparent point of focus**

1. Put your pointer anywhere on the green portion of the slider bar.
2. Drag left or right to shift the point of focus more to the left or right in the profile image.

## *Generating a Report File*

Prior to generating your report, you may want to examine, and perhaps change, the current profile setup parameters and the report parameters. Two icons in the Display Profile window are available for this purpose: The **Profile Setup** icon (explained in ***'To examine and change the current profile setup values'***), and the **Generate a Report File** icon (shown on the right and explained next).

**To examine and change report parameters**

If you click the **Generate a Report File** icon, you get a dialog box where you can specify a few basic parameters for the report. Figure 52 shows such a dialog box. A profile report contains a series of points based on the **Output Distance Interval** — one point per line in the report. At minimum, each line in the report is composed of data for distance, location (eastings and northings as well as longitude and latitude), the layer's depth at the specified point. The report also contains the slope for the point if **Compute Slope** was specified.

Profile reports are in the ASCII format, either as plain text having decimal-aligned formatted columns (and assigned a TXT file extension) or else as plain text having comma-separated values (and assigned a CSV file extension). The latter is suitable for importing into an application such as an Excel spreadsheet.

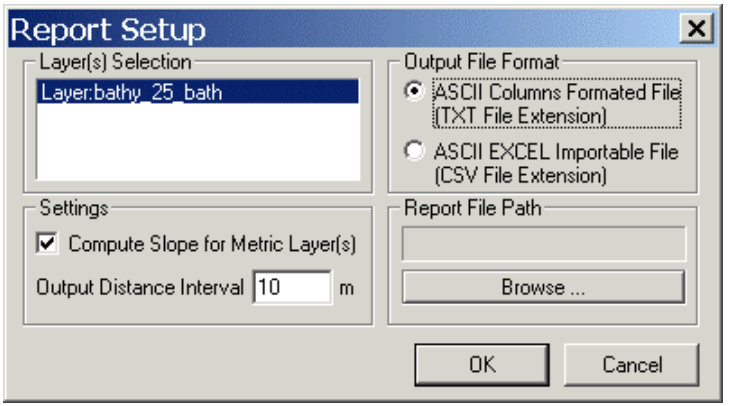



***FIGURE 52. Report Setup example for generating a report***

**To generate a report file**

1. In the Report Setup dialog box click one of the two radio buttons to designate an ASCII file type for your report.
2. Decide on the **Output Distance Interval** — that is, the interval, in meters, of tracked points to be saved in the generated report. The default is an interval of 10 meters.

   For profiles spanning short distances, you may get the most benefit by specifying short intervals so that your report has sufficient detail; conversely, profiles that span long distances may benefit from longer intervals so that your report doesn't have so much data that it becomes difficult for the analyzer to discern patterns in the output.

3. Decide whether to include or exclude slope data as part of the report: Put a check mark in the **Compute Slope** box to include that type of data, or clear the box to exclude the data.
4. In the Layer Selection field of the dialog box, specify the layer(s) to be profiled in your report. You must choose at least one layer.
5. Click **Browse** to specify the name of your profile report.

   The system displays a standard Windows Save As dialog box. The Save as type spin box is preset to the file type you selected in the Report Setup dialog box — **TXT** for plain ASCII text, or **CSV** for a comma-separated variable text file. DelphMap does not provide a default file name, so you must specify your own file name and folder.

6. Click **OK**.

   The system generates your report. An example of plain text output of a display profile is shown in Figure 53.

DisplayProfile--PlainTextReportFile21Points.TXT - Notepad

File Edit Format Help

PROFILE REPORT FILE

Layer #4 : name = bathy_25_bath file = bathy_25.dds_vif

| Distance (m) | Easting (m) | Northing (m) | Longitude | Latitude | Layer #4 (m) | Layer #4 (°) |
|---|---|---|---|---|---|---|
| 0.00 | 2393745.92 | 5728713.02 | 28°40'08.15"E | 40°54'39.43"N | -86.25 | NA |
| 10.00 | 2393754.95 | 5728708.74 | 28°40'08.54"E | 40°54'39.29"N | -86.40 | -0.859 |
| 20.00 | 2393763.99 | 5728704.46 | 28°40'08.93"E | 40°54'39.15"N | -86.45 | -0.286 |
| 30.00 | 2393773.03 | 5728700.18 | 28°40'09.32"E | 40°54'39.01"N | -86.60 | -0.859 |
| 40.00 | 2393782.07 | 5728695.90 | 28°40'09.71"E | 40°54'38.87"N | -86.75 | -0.859 |
| 50.00 | 2393791.10 | 5728691.61 | 28°40'10.10"E | 40°54'38.73"N | -86.85 | -0.573 |
| 60.00 | 2393800.14 | 5728687.33 | 28°40'10.49"E | 40°54'38.59"N | -87.05 | -1.146 |
| 70.00 | 2393809.18 | 5728683.05 | 28°40'10.88"E | 40°54'38.45"N | -87.15 | -0.573 |
| 80.00 | 2393818.22 | 5728678.77 | 28°40'11.27"E | 40°54'38.31"N | -87.30 | -0.859 |
| 90.00 | 2393827.25 | 5728674.49 | 28°40'11.66"E | 40°54'38.17"N | -87.50 | -1.146 |
| 100.00 | 2393836.29 | 5728670.21 | 28°40'12.05"E | 40°54'38.03"N | -87.45 | 0.286 |
| 110.00 | 2393845.33 | 5728665.93 | 28°40'12.44"E | 40°54'37.89"N | -87.20 | 1.432 |
| 120.00 | 2393854.37 | 5728661.65 | 28°40'12.83"E | 40°54'37.75"N | -87.25 | -0.286 |
| 130.00 | 2393863.40 | 5728657.37 | 28°40'13.22"E | 40°54'37.61"N | -87.50 | -1.432 |
| 140.00 | 2393869.29 | 5728662.22 | 28°40'13.47"E | 40°54'37.77"N | -87.45 | 0.286 |
| 150.00 | 2393873.76 | 5728671.16 | 28°40'13.66"E | 40°54'38.06"N | -87.45 | 0.000 |
| 160.00 | 2393878.23 | 5728680.11 | 28°40'13.86"E | 40°54'38.36"N | -87.35 | 0.573 |
| 170.00 | 2393882.70 | 5728689.05 | 28°40'14.05"E | 40°54'38.65"N | -87.05 | 1.718 |
| 180.00 | 2393887.18 | 5728698.00 | 28°40'14.24"E | 40°54'38.94"N | -85.80 | 7.125 |
| 190.00 | 2393891.65 | 5728706.94 | 28°40'14.44"E | 40°54'39.23"N | -84.75 | 5.994 |
| 200.00 | 2393896.12 | 5728715.88 | 28°40'14.63"E | 40°54'39.53"N | -84.10 | 3.719 |
| 210.00 | 2393900.59 | 5728724.83 | 28°40'14.82"E | 40°54'39.82"N | -83.70 | 2.291 |

***FIGURE 53. Profile Report generated from Display Profile function***

***Note:*** The column labeled **Layer #4 (m)** identifies depth data for the named layer. The column labeled **Layer #4 ( )** identifies slope data for the named layer. The latter column appears only if you had enabled the **Compute Slope** feature of the Report Setup dialog box.

**To modify or delete a displayed profile**

In the DelphMap imagery right-click to display a child window of three choices related to the Display Profile task:

- **Display Profile**: displays the profile if it is not already displayed

- **Delete last point**: deletes the last point you inserted into your imagery
- **Erase profile**: delete the entire profile (all points)

## *Importing Profile Lines from .DXF or ASCII Files*

Profile lines can be generated using several methods: By drawing a line using **Digit**, by importing a **.DXF** file, or by importing an ASCII file.

**To import a .DXF profile line**

1. Right-click on **Image Layers** or choose **Project→Insert Layers** and choose ***.DXF** from the file types menu.
2. Insert the chosen **.DXF** file.
3. Set **Digit** to be active and choose the polyline icon (shown here at the side of the page):
4. Click the imported line to highlight it.

   Right-click the highlighted line to access object menu and choose **Display Profile**.

**To import an ASCII profile line**

1. To import a line defined by ASCII points, use the following file format:

***Label***

***X, Y***
***X, Y***
***X, Y***

(If no label is required, omit the label in the ASCII file.) The ASCII profile line can have up to 1000 points.

2. Make **Digit** active by choosing **Tools→Digit** or simply click the icon on the toolbar.

3. Click the **Import objects from an ASCII file** icon from the Digit toolbar. The icon looks exactly like the **Open a Project** icon:
4. Open the ASCII file.

   The system displays the ASCII file importation setup dialog box with the data of your ASCII file.

5. Define the X and Y positions and units. Then click **OK**.

   In a series of projection-related dialog boxes, you will then be asked to define the geodesy of the ASCII file. The projection of the ASCII file must be the same as that of the DelphMap project.

6. Once the line displays, choose the polyline icon from the **Digit** menu and click on the imported ASCII line to highlight it.
7. Right-click the highlighted line to access object menu and choose **Display Profile**.

# Chapter 7 Printing and Comparing

DelphMap imagery can be printed. You can also use DelphMap to compare two files and reveal the differences to you.

## *Printing*

You can print the image displayed in DelphMap's main display window. You can also preview the image before printing it, and you can adjust the scale before printing.

Prior to printing, you should always set up your printer/plotter first and decide what paper size you are going to use. In order for the print preview option in DelphMap to work correctly, it must know the paper size. DelphMap gets this information when it first starts up by going to the default Windows printer. Thereafter, the print preview will show you exactly how your plot will appear on paper.

**To print a DelphMap image**

1. Use the selection tool to select the area of the image that you want to print, and turn on the grid display if you want a grid on your print.
2. Click **Project→Print Preview**.

   A window opens to show you how your project will appear on the page.

3. Click **Map Layout**.

   Note that DelphMap suggests a scale that will include the whole area of your data. If you wish to change this scale, type in the value you need and click **OK**. The print preview will change to reflect the new scale setting.

4. Click **Map Layout** again and specify the rotation that want to apply to your image.

   You can specify values from -180 to +180. Note that the rotation of the image occurs around the center of the area chosen in step #1.

5. After you are satisfied with the appearance of the image, you can enter some Titles in the upper and lower Title boxes (see Figure 54). You can also type the names of bitmaps containing logos (they must be in the **BMP** format).
6. Click **Print**.

The print preview closes and the printer dialog box for the current windows printer opens.

***Note:*** It is not advisable to change properties at this time, since the settings will no longer reflect the setup in print preview mode.

7. Click **OK**.

   A dialog box appears and states, **Printing *{projectname}*.DMP** to ***{printer_name}***, where **DMP** to ***{printer_name}***, where ***{projectname*** and ***{printer_name}*** and ***{printer_name}*** are the actual project and printer being used in this case.

***General Notes:***

- The printing of large bitmaps requires a lot of free of space on the hard disk for the Windows printer's spool file. For all operating systems the printer spool file must be on the **c:** drive. From experience, we know that an A1 sized print needs about 150MB of free space for the printer's spool file.
- Unless your printer/plotter has a large amount of memory, you probably will need to select **use computer memory** in the printer driver. In turn, your operating system will require more hard disk space to be available for the Windows NT/2000 page file.
- Printing to a large plotter can take a great deal of time. On all but the highest specification machines (such as a dual-processor computer), printing probably will "take over" the whole system. While DelphMap is writing the data to the spool file, if you open the Windows Task manager you will see the message that claims DelphMap is "not responding" — however, this is normal behavior.
- We have found that Windows 2000 handles this operation more easily than earlier operating systems.
-

The system displays a view of the image similar to the print preview dialog box; in addition, the system superimposes a grid of your specified scale over the image and any titles you may have specified in the Map Layout dialog box. A sample view of this kind appears in the image on the right in Figure 54.

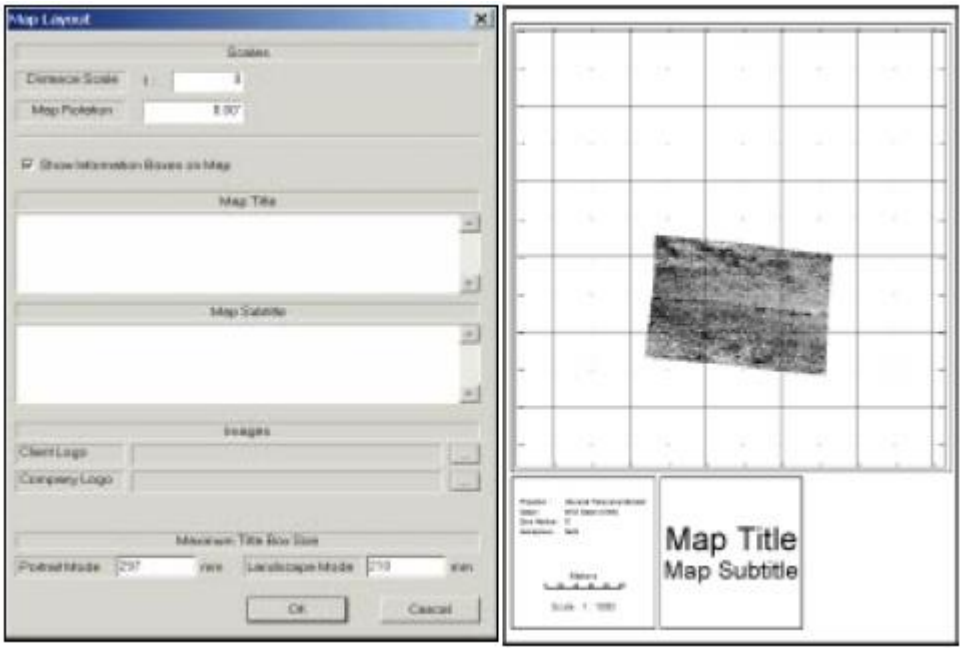



***FIGURE 54. From Map Layout dialog to a resulting view of imagery***

## *Seeing Differences Between Two Similar Files*

Suppose you conduct a data survey and then you survey the same area at a later time. Usually you want to know if there are any differences in the two surveys. Maybe new objects have been added or removed from the area. Or maybe you have the same objects in two mosaics, but they have changed locations or orientation. Or maybe the relationship of the seafloor to the sea surface has changed. DelphMap has two tools to help you find and assess these differences. In DelphMap, file differences can be computed from two two-dimensional or two three-dimensional files.

The first tool compares two DDS_VIF files as an “A-B” comparison, where one line is subtracted from another, revealing their differences in a third DDS_VIF file. Ideally, the files that are being compared should be two side scan sonar data files. (Although there’s nothing to prevent you from doing an “A-B” comparison of two bathymetry DDS_VIF files, the better tool for comparing bathy data is DelphMap’s volumetric computation tool, which is designed for working with bathy files.)

Volumetric computation computes the volume from two DDS_VIF bathymetry files and puts the results in a third DDS_VIF file containing the differences between the two compared files. This is the second comparative tool available in DelphMap. These differences show up on your screen as color-coded images extracted from the differences in values between the compared files. Because volume is three-dimensional, the files used in volume computation must be bathymetry files, not sidescan files.

## Making an 'A-B' Comparison

To make a valid "A-B" comparison, you must use the same method and approach in gathering data for the two surveys. Obviously, you must conduct your second survey over the same area that you did for the first survey. Less obviously, you should use the same range scales, and your towfish should be operating at the same altitude while recording each mosaic.

**To compute A-B differences between two similar files**

1. Open an existing project or create a new one.
2. Into the open project insert two layers representing two similar but possibly different DDS_VIF files (lines).

   An example of such a pair of lines is shown in Figure 55.

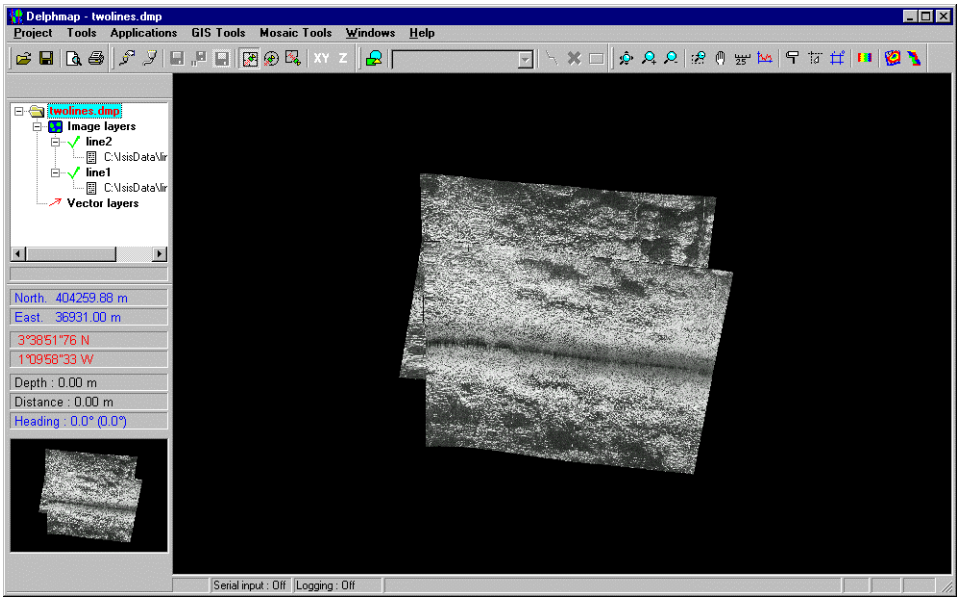



***FIGURE 55. Two similar lines before computing a comparison***

3. From the DelphMap main menu, access **Tools→A-B**.

   The system displays the A-B Computation dialog box (Figure 56).

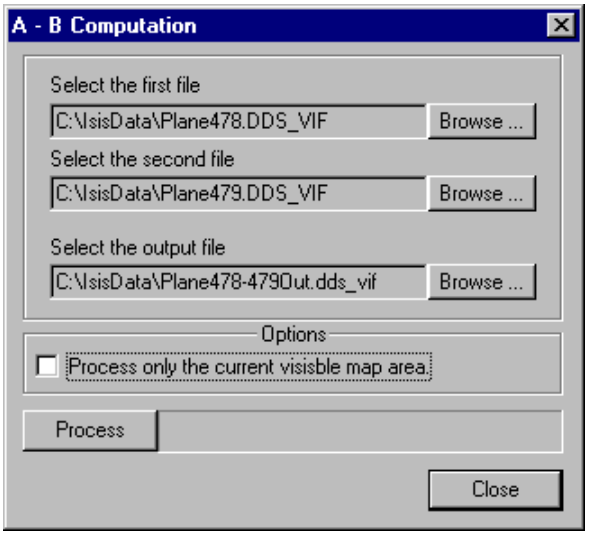



***FIGURE 56. The A-B Computation dialog box***

The entries for the first file, the second file, and the output file that will contain the differences between the first and second are initially blank, awaiting your specifications.

4. Using the available **Browse** buttons, specify the three files.

   In Figure 56 examples have been supplied for this dialog box.

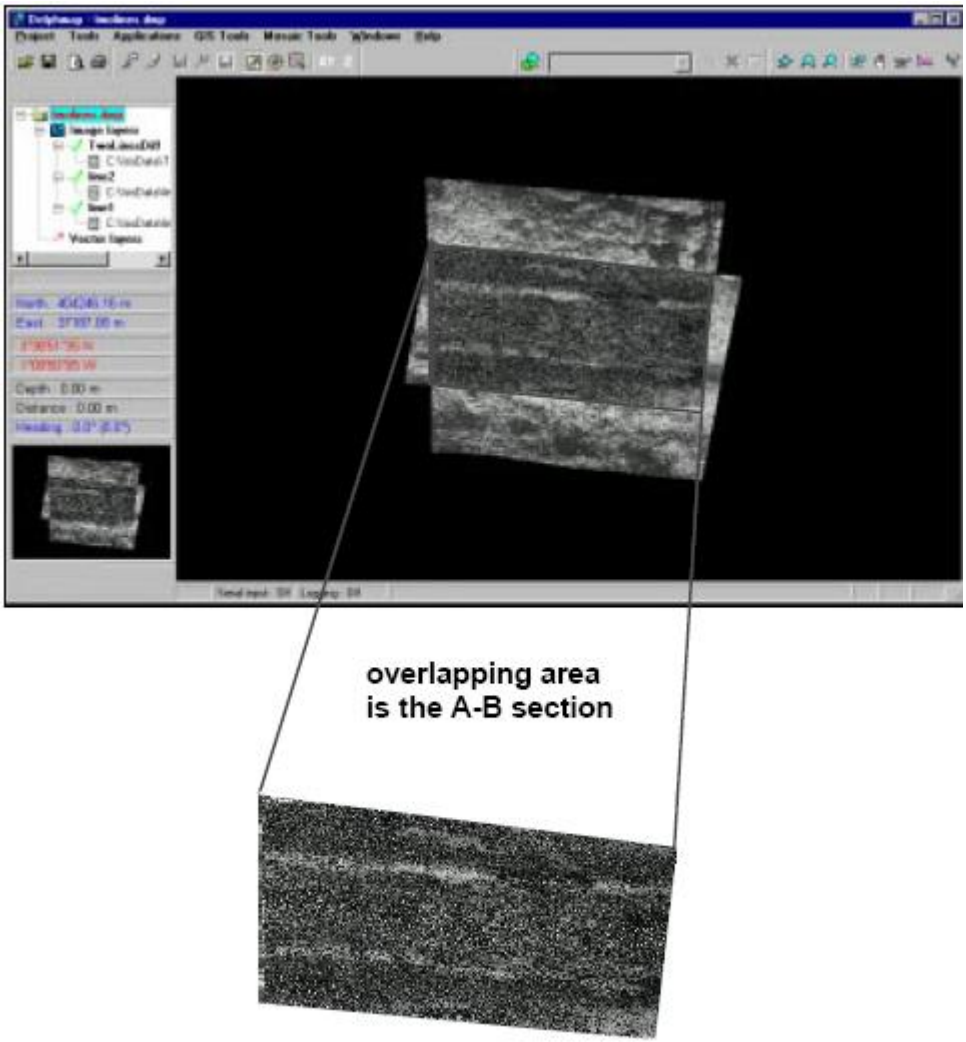
5. Click **Process**.

   DelphMap computes the differences between the two files. A blue line indicating processing progress briefly displays in the area to the right of the **Process** button.

6. Click **Close** when processing has finished.

7. Into the currently open project insert as a new layer the output DDS_VIF file specified in step #4.

   DelphMap inserts the layer into your workspace and superimposes the output image over the other layers. This will display as a darker image. This darker image is a subset and thus the A-B computation of the first and second files you specified in step #4. Figure 57 shows an example of this.


overlapping area
is the A-B section

## Computing Volumetric Differences

To make a valid volumetric comparison between any two ***bathymetry*** DDS_VIF files from the same area, you must use the same method and approach in gathering data for the two surveys. In addition to conducting your second survey over the same area that you did for the first survey, you should use the same range scales, and your towfish should be operating at the same altitude while recording each mosaic.

**To compute volume differences between two similar bathy files**

1. Open an existing project or create a new one.
2. Into the open project insert two layers representing two similar but possibly different ***bathymetry*** DDS_VIF files.

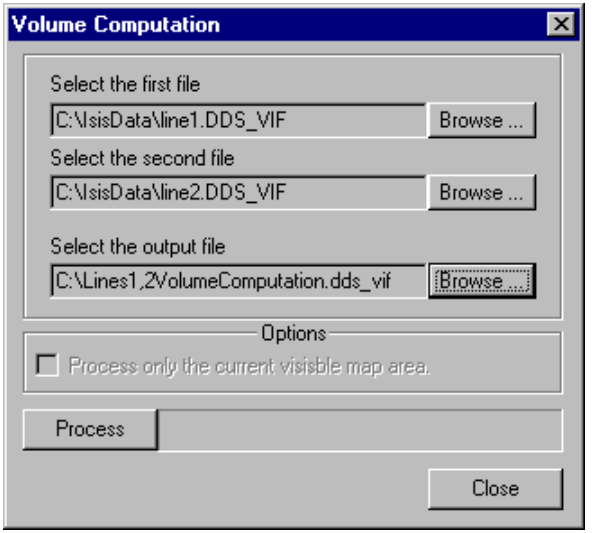



***FIGURE 58. The Volume Computation dialog box***

3. From the DelphMap main menu, access **Tools→Volume computation**.

   The system displays the Volume Computation dialog box (Figure 58).

The entries for the first file, the second file, and the output file that will contain the differences between the first and second are initially blank, awaiting your specifications.

4. Using the available **Browse** buttons, specify the three files.
5. Click **Process**.

   DelphMap computes the differences between the two files. A blue line indicating processing progress briefly displays in the area to the right of the **Process** button.
6. Click **Close** when processing has finished.

   The volumetric differences are now captured in the output file you specified in step #4.

   You can view the output file by inserting it as a layer in the current project or by creating a new project and inserting the output file as a layer in the new project.

# Chapter 8 TIFF and GeoTIFF Differences

## A Peek at TIFF and GeoTIFF Differences

Many raster file formats can be displayed as images on a PC. Prominent among these formats is the TIFF format. A TIFF file can be read by almost all graphical "paint-style" programs that commonly run on the Windows operating systems. (TIFF files, usually identified by the file extension **TIF**, also can be imported into other, major applications such as Microsoft Word.)

A subset of the TIFF format is the GeoTIFF format. It's simply a TIFF image that has extra information about the geographic position of the image. Because a GeoTIFF is a subset of TIFF, it can be opened as a normal TIFF.

More importantly to the user of the GeoTIFF format, certain programs can decode the geo-coordinate information inside a GeoTIFF file. A partial list of companies and products that have this capability are shown in Table 5.

Some companies, such as AutoCAD, have programs that partially support GeoTIFF. That is, they can import the GeoTIFF format but not decode the geo-coordinates in the file. Autodesk's AutoCAD14 is such a program: It can import a GeoTIFF, but AutoCAD does not directly read the geo-positioning information contained in the GeoTIFF; to AutoCAD, it's simply a normal TIFF file. However, AutoCAD14 does let you assign geographic coordinates to an image. Even so, AutoCAD14 won't tell you what coordinates to use; you have to get that information beforehand from some other source, such as DelphMap or a GeoTIFF viewer.

***Note:*** You can download a free GeoTIFF viewer from the ER Mapper web site (Table 5). From ER Mapper (or from DelphMap) you can discover the coordinate information to be accessed.

## Mapping Geo-Coordinates to Images

Information in images is stored in row-and-column order, starting from the top left of an image. However, row-and-column order — convenient though that is for computers — doesn't conform neatly to the geographic world made up of x and y coordinates. Before the row-and-order scheme can be associated with the geo-coordinate scheme, the geo-coordinate scheme must be mapped, or ***registered***,

to the computer's world of row-and-order scheme. Geo-referenced files can do this if those files make all their geo-referenced information available in a separate ***header*** file. (In fact, if the header file contains geo-referencing, the file is then a special kind of header file called a ***world file***.)

In the case of DelphMap, the world file has an extension of **TFW** and is created whenever a TIFF or GeoTIFF file is exported from DelphMap.

Conveniently enough, this header file is an ASCII file, which can be easily read and interpreted by a variety of software programs. If the user knows the geo-referencing that is contained in a given geo-referenced image, the user can even create the header file apart from the geo-referenced file, without having to run it through some software that would extract the world geo-information contained in the image.

## *A Look at Geo-Referencing in a World File*

When your software displays a geo-referenced image on your screen, the software capable of displaying the image looks for the geo-referencing in any of these sources, in this order:

1. the world file (if available)
2. the header file (if your image file supports header files)
3. the row-and-column information in the image (also called an ***identity transformation***)

If more than one geo-referenced source is available, the software uses the source having the highest priority (1 before 2 before 3 in the above list) and disregards the other source or sources. An important implication of this rule of precedence is that if your image doesn't have a corresponding world file, and you create one, the created world file takes precedence over the other two sources because a world file always has highest priority.

**TABLE 4. Arrangement of a world file's data**

| Typical World File's Contents | Meaning of the Contents |
|---|---|
| 12.34567890123456 | the **x**-scale vector size of a pixel, in map units |
| 0.00000000000000 | the amount of rotation for a row (that is, along the **x**-scale) |
| 0.00000000000000 | the amount of rotation for a column (that is, along the **y**-scale) |
| -12.34567890123456 | the **y**-scale vector size of a pixel, in map units; this is the negative value of the pixel's **x**-scale vector size, so that any differences between image and non-image origins can be distinguished. |
| 987654.98765432101234 | the **x** coordinate, in map units, of the center of the upper left pixel |
| 9876543.98765432101234 | the **y** coordinate, in map units, of the center of the upper left pixel |

***Note:*** Software capable of reading a world file always expects to read data in the order of the values are shown in Table 4.

**To get an image's geo-coordinates from DelphMap**

- Click **Project→Project Information...**

  DelphMap displays a dialog box containing the coordinate information. An example appears in Figure 59.

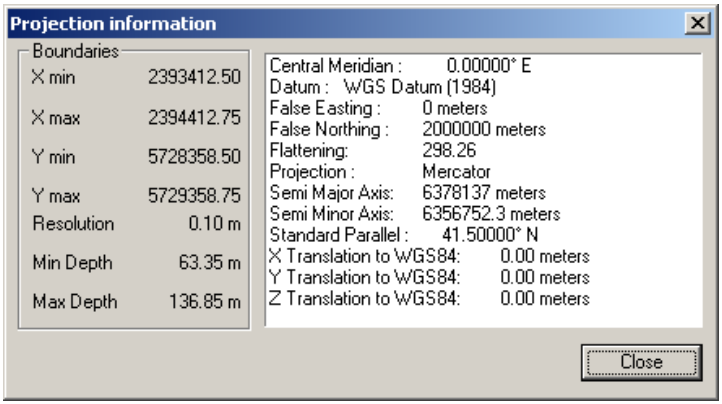



***FIGURE 59. Projection Information window with typical data***

Finally, be aware that although DelphMap can export only certain DDS projections to GeoTIFF, DelphMap can always export to TIFF. You use the information from the Projection Information dialog box to specify resolution, X-Y limits, etc. Additionally, whenever a GeoTIFF or TIFF file is exported from DelphMap, a world file is created. See ***"Mapping Geo-Coordinates to Images"***.

## *Supported GeoTIFF Projections*

DelphMap supports Universal Transverse Mercator (UTM) projections having certain Datums, certain Lambert projections (with all Datums), and nearly all State Planes in the United States (with their Datums). Unsupported State Planes will be noted in this section.

### Supported UTM / Datum Pairs

The most commonly used Datums for UTM projections that DelphMap supports are:

- WGS Datum (1984)
- WGS Datum Special (1984)
- WGS Datum (1972)
- North American Datum (1927)
- North American Datum (1983)
- European Datum (1950)

DelphMap also supports these less commonly used Datums for UTM projections:

- Adindan Datum
- Indian Datum
- Indian Special Datum
- Kertau Datum
- La Canoa Datum

### Supported Lambert Projections

- Lambert I
- Lambert II
- Lambert III
- Lambert IIe

### Unsupported State Planes

DelphMap supports most State Planes projections. However, the following State Planes projections are ***not*** supported:

- Great Lakes
- Louisiana offshore
- Old Michigan
- Samoa
- Alaska Zone 1
- California VII
- Montana Central
- Nebraska South
- St. Croix

## *Web Sites Covering GeoTIFF Concepts*

Because the subject of GeoTIFF is quite large, you may want to delve further into the topic. The Internet's World Wide Web has some excellent sites for exploring GeoTIFF

**TABLE 5. Some Web Sites Having GeoTIFF Information**

| Item | Site Name | URL |
|---|---|---|
| geotiff.zip | Triton Elics International, Inc. | http://www.tritonelics.com |
| ArcView | ESRI | http://www.esri.com |
| ER Mapper | Earth Resources Management | http://www.ermapper.com |
| AutoCAD14 | Autodesk | http://www.autodesk.com/products/acadr14/ |
| general GeoTIFF info | SPOT Image Corp. | http://www.opengis.org/public/presentations/geotiff/index.htm |

Finally, any of the Web search engines (Yahoo, Alta Vista, etc.) can direct you to additional GeoTIFF information.

# CHAPTER 9 Troubleshooting Problems

## *Frequently Asked Questions…and Answers*

Some problems go away by using simple workarounds. Here are some workarounds to some common problems.

### Question:

***What do I do if I encounter the following message?***

The ordinal 6880 could not be found in the dynamic link library MFC42.DLL

### Answer:

**MFC42.DLL** problem is indicated. That message can be generated when **serialsrv.exe** is started by double-clicking on it in Windows explorer.

***Explanation:*** Windows NT, even at Service Pack 6a, does not have a high enough revision of **MFC42.DLL**. Despite this shortcoming, the TEI installation loads the correct version of **MFC42.DLL**. It is located in the ***{Installation}*** folder (typically **D:\TEI\TEISuite\Delphmap.exe**).

However, if DelphMap is *not* running, then the old version of **MFC42.DLL** will be loaded because **serialsrv.exe** is located in the **\TEldlls** folder and does not have access to the new **MFC42.DLL**. This results in the error message noted earlier.

None of these problems occur with Windows 2000 because all required system DLLs are at a high enough revision level, and no system DLLs are loaded by the installation.

***Solution:*** There are two ways to deal with this:

- A "quick fix" is to copy the **MFC42.DLL** file into the **C:\WINNT\SYSTEM32** folder, overwriting the current file. While this works, Microsoft does not recommend this practice.
- A better solution is to use the **Init – find serial server** dialog box to redirect the system's attention to the proper **MFC42.DLL** residing in the ***{Windows Installation}*\TEldlls** folder. (This is the proper **MFC42.DLL** to use because, when Delph Seismic starts, it loads the higher version of **MFC42.DLL**, making it available for **serialsrv.exe**. The first time Delph Seismic runs in real time *and* requires the navigation input to be active, the system displays the **Init – find serial server** dialog box.)

Much information concerning **serialsrv.exe** is stored in two INI files: **serialdll.ini** and **serialsrv.ini**. Problems relating to **serialsrv.exe** can often be solved by deleting these two INI and restarting DelphMap. After these two files are correctly configured, the whole operation is automatic from that point on.